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No. XIV. OF VOL. I., 1933. LONDON, SATURDAY, APRIL 8, 1933 Pp. 120 — Price 1s.
No. 5719. Vol. CCXXIV. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

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BLOOD PRESSURE IN THE HEALTHY YOUNG MALE ADULT

By H. A. Treadgold, M.D., M.R.C.P. Lond.
WING-COMMANDER, ROYAL AIR FORCE

The accepted standards for normal blood pressure are based mainly on American actuarial figures, authoritative standards for healthy young adult males in this country being almost non-existent. During the last eight years spent at the Central Medical Board, Royal Air Force, exceptional opportunities have fallen my way for the study of this question in well over 20,000 cases, and it is the purpose of the present paper to attempt to frame British standards and to discuss at the same time the relative values of the many factors concerned.

The sources from which the figures have been prepared are: (1) Blood pressures obtained yearly at the annual medical examination of all fit R.A.F. pilots since 1921. The yearly average is approximately 2400. A more detailed analysis has been made of 2497 fit pilots examined in this way in the summer of 1932 in all R.A.F. stations at home and abroad between the ages of 18 and 40. My thanks are due to the Statistical Department of the Air Ministry for the preparation of these figures by the Hollerith system. (2) A detailed analysis of over 2000 candidates for flying on their first examination at the Board and their subsequent progress in the Royal Air Force as regards blood pressures in certain selected groups. Figures were calculated by a comptometer and independently cross-checked to ensure accuracy. (3) A series of 71 professional civil pilots who have been examined at the Board at consecutively six-monthly intervals for at least five years.

In all cases the lowest of at least three readings by the auscultatory method has been taken in the sitting posture, and the type of instrument used is the broad-gauge U-tube manometer with a standard 12 cm. cuff, in use throughout the Royal Air Force. Aneroid types are not employed in view of their unreliability. Since the introduction of the American baumanometer into this country, with its advantages of easy reading, compactness, and reliability, English models, such as the Accoson, have been introduced at a much lower price, and it is to be hoped that this type of instrument will shortly supersede all existing aneroid types.

Estimation of Blood Pressure

There are certain points to be observed in the technique, a neglect of which will materially affect the readings obtained.

(1) All patients should preferably be stripped to the waist to avoid the constriction of a rolled-up shirt or vest, which, if tight, can alone almost obliterate the brachial artery by direct pressure.

(2) The patient should be told to lean back comfortably in the chair and completely relax the muscles of the arm used.

(3) The cuff should be applied well above the elbow so that its lower border is two inches above the elbow. The stethoscope chest-piece should then be applied lightly over the brachial artery below the cuff and above the elbow itself, as unduly low readings will often be obtained if the chest-piece is not placed over the brachial artery itself.

(4) The patient should not be allowed to see the mercury column, as an intelligent individual can read his own systolic and diastolic pressures by noticing the points at which the throb in his arm under the cuff commences and disappears.

As pressure is increased in the armlet the point at which all sound disappears should be noted, and then a further pressure of 50–60 mm. of mercury applied to avoid missing the silent period which occasionally occurs, especially in hypertension, usually at the end of the first phase.

The systolic pressure should be read as the first clear sound becomes audible on lowering the pressure. Very faint thuds or murmurs are occasionally distinguishable in thin, poorly developed individuals for 5–10 mm. before the appearance of the first clear thump of the first phase, and these pre-phase sounds can be ignored.

The commencement of the first phase may sometimes be found to vary from moment to moment as much as 10–20 mm. Hg, mainly in individuals who show other signs of cardiovascular inefficiency. This may be the result of respiration, inspiration causing a fall of both systolic and diastolic pressures, or it may be due to sinus arrhythmia varying the height of the systolic pressure which is increased by cardiac acceleration. A varying systolic pressure of this nature may be due to either or both of these causes together, and the lower readings may safely be recorded as the systolic pressure.

The first phase merges into the second by the addition of a murmur, and as this disappears the sound itself becomes louder and clearer. This marks the commencement of the third phase, and this in its turn becomes dull and muffled as it changes to the fourth phase. It is unfortunate that the majority of American figures for the diastolic pressure are based on the point at which all sound ceases. Experimental evidence is strongly in favour of the true diastolic pressure coinciding with the commencement of the fourth phase. As Stocks and Karn [1] also point out, the fourth phase may often be absent, and although its average length is 5–6 mm. Hg, it may be as long as 50 mm. In my own experience it is not at all uncommon for it to be present in the unconstricted artery for short periods in excitable, healthy youngsters under 25. When difficulty in determining the beginning of the fourth phase is experienced, the patient can usually assist by stating the exact moment at which throbbing of the pulse under the armlet ceases. This nearly always coincides with the onset of the fourth phase. Diastolic as well as systolic pressures should invariably be recorded. In fact, it can safely be said that estimations of systolic pressures alone may be both misleading and dangerous. As an instance of this, a reading of 125/100 would be strongly suggestive of a pathological cause, whereas one of 155/75 in a young adult under the excitement of an important medical examination is usually of no significance. It is probable that exactly the opposite interpretation would be placed on such cases by a medical examiner relying on systolic readings alone.

The Factors Concerned

Factors concerned in the blood pressure of healthy young adults are:—

AGE

American life assurance figures have shown that age, between 18 and 40, has little effect on blood pressure. Thus Symonds [2] in 1923, analysing 150,000 American lives, shows the average blood pressure at 20–24 years to be 123/80, and at 35–39 years 125/83. Stocks and Karn [1] in 1924, in this country, emphasised the fact that systolic pressures did not vary between 18 and 40, but claimed that there was a sudden rise to 84 of the diastolic pressure between 18 and 21 and a gradual fall to below 80 at 35. In the 1921

Health Report of the Royal Air Force, attention was drawn by the author to the fact that age between 18 and 40 did not appear to affect systolic pressures. R.A.F. figures have confirmed this ever since, but have provided no confirmation of the claim of Stocks and Karn as to rise and subsequent fall of the diastolic pressure described by them.

Table I. shows the figures for 1932 of 2497 fit R.A.F. pilots, which are closely similar to those of previous years.

TABLE I.—*Showing the Effect of Age on Blood Pressure in 2497 Fit Pilots in 1932*

Age-groups.	19 & 20	21–25	26–30	31–35	36–39	Total
Number examined	102	1140	569	406	280	2497
Systolic pressure	122	124	124	124	125	124
Diastolic pressure	75	76	77	78	79	77

It is difficult to see why age per se should have any marked effect on blood pressure in healthy adults, and there appears no reason to suppose that a man of 50 or 60, given normal health and freedom from cardiovascular disease, should show any marked change from his blood pressure in early adult life. The fact that systolic pressures do rise to 135 at the age of 60 (Symonds [2]) is probably due to the relative frequency of cardiovascular disease at this age, raising the average as a whole. This view receives support from the finding of Donnison,[3] who studied the blood pressure of 1000 healthy Kenya natives in five-year age-groups and found their pressures to be practically identical with Europeans up to 40, after which they fell steadily to 106/67 at 57, compared to 135/88 of Europeans and Americans of the same age. He found that the natives were singularly free from cardiovascular disease as a whole, although pyorrhœa was universal over 30 and infections in general extremely frequent.

HEIGHT, WEIGHT, AND BODY-BUILD

Height.—Table II. shows that neither systolic nor diastolic pressures are appreciably affected by height, provided that height and weight are proportionate—i.e., in cases of normal body-build.

TABLE II.—*Showing that Blood Pressure is Unaffected by Height if the Body-build is Normal*

(Same cases as in Table I.)

Height groups (cm.)	164 and under	165–169	170–174	175–179	180–184	185– and over	Totals
Number examined	65	240	632	816	520	224	2497
Age	26	28	28	28	28	27	28
Height (cm.) ..	162	168	172	177	182	188	176
Weight (kg.) ..	60	64	68	71	74	79	70
Body-build (kg.) ..	+2	+1	+2	+2	+2	+2	+2
Systolic (mm. Hg)	122	123	123	124	125	124	124
Diastolic (mm. Hg)	76	77	77	77	78	76	77

Body-build in this and ensuing Tables is calculated from British life assurance figures [4] and is expressed as plus or minus so many kilogrammes, dependent on whether the group concerned is over-weight or under-weight. The average for R.A.F. pilots is +2 kg., and this is to be expected when one considers the close association of under-weight and physical inefficiency and the elimination of this type at the medical examination on entry.

Weight.—Table III. shows the effect of weight. It will be noticed that blood pressure varied from 118/75 in the lightest group to 132/82 in the heaviest, that the systolic increase is double that of the diastolic,

TABLE III.—*Showing the Effect of Abnormal Body-build on Blood Pressure. Cases as in Tables I. and II., but arranged in Weight-groups*

Weight-groups (kg.)	54 and under	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95 and over	Totals
Number examined	37	158	456	652	536	377	158	66	31	26	2497
Age	28	27	27	27	27	28	29	31	31	32	28
Height (cm.).	167	170	174	176	178	180	181	183	183	182	176
Weight (kg.)	53	58	63	68	72	77	82	87	92	100	70
Body-build (kg.)	−10	−6	−3	±	+3	+6	+11	+13	+15	+25	+2
Systolic ..	118	122	122	124	124	125	127	127	130	132	124
Diastolic ..	75	75	76	77	76	78	80	80	80	82	77
Pulse pressure	43	47	46	47	48	47	47	47	50	50	47

and that it is the degree of disproportionate weight that matters. In other words, providing they are proportionate at any given age, neither height nor weight are factors in blood pressure.

Body-build.—All American life assurance figures show the important bearing of abnormal body-build on blood pressure. Thus Symonds,[2] classifying his cases into four under-weight and five over-weight groups, gives figures of from 118/77 for the lightest, to 131/86 for the heaviest over-weight group at the same average age as the R.A.F. figures in Table II.—i.e., 28. It will be noticed that the systolic figures agree but the diastolics average 2–4 mm. Hg higher than in the R.A.F., as they also do in his age-groups.

CARDIOVASCULAR EFFICIENCY

Pressures vary directly with the pulse-rate. The results of a series of 250 R.A.F. candidates in five equal classes are shown in Table IV. The diastolic is unchanged until the pulse-rate is over the 100, but the systolic increases steadily throughout.

TABLE IV.—*Showing Effect of Rise of Pulse-rate on Blood Pressure in 5 Groups of 50 Cases Each*

Average pulse-rate.	Systolic.	Diastolic.
60	128	78
71	133	79
81	133	80
95	136	79
112	141	84

A better way of dealing with the problem is to study the effect of cardiovascular efficiency on blood pressure as a whole. Judging cases by the R.A.F. pulse response and 40 mm. tests,[5] and dividing them into

TABLE V.—*Showing Blood Pressures of 1256 Candidates in Relation to Cardiovascular Efficiency (C.V.E.), Inefficiency (C.V.I.) and Body-build*

Number of cases in parentheses

—	Under-weight.	Normal.	Over-weight.	Total.
C.V.I. (220)	135/75 (93)	142/80 (96)	144/84 (31)	139/79
C.V.E. (1036)	128/76 (212)	131/78 (551)	135/80 (273)	131/78
Total (1256)	130/76 (305)	132/78 (647)	136/81 (304)	133/79

two classes—i.e., those whose cardiovascular efficiency was considered adequate for service flying, and those who fell below this standard (cases of cardiovascular inefficiency)—the figures shown in Table V.

were obtained. The groups were divided into under-weight, normal, and over-weight groups. Normal body-build included all cases whose height at their respective ages was 5 cm. or less, above or below the normal for their weight. The importance of allowing for the body-build factor is self-evident. It will be noticed that the differences in both systolic and diastolic pressure in the different body-build groups are more pronounced in the cases of cardiovascular inefficiency and that the diastolic variation is practically as great as the systolic. The high proportion of under-weights in the inefficient group is worth observing.

THE EMOTIONAL FACTOR

The average systolic pressure of the 1036 fit candidates shown in Table V. (131/78) is well above that of the normal blood pressure of the serving officer (124/77). This is typical of the normal emotional response one may expect in healthy young adults at their first examination, particularly those between the ages of 18 and 25, before full stabilisation of the cardio-vascular system as a whole has occurred. Although the literature emphasises the importance of the emotional factor, definite figures showing the heights to which it can rise and the significance to be drawn from the relative alterations in systolic and diastolic pressures are few. At the R.A.F. Board it is quite usual, if blood pressure is found to be abnormal, for three readings to be taken during the medical

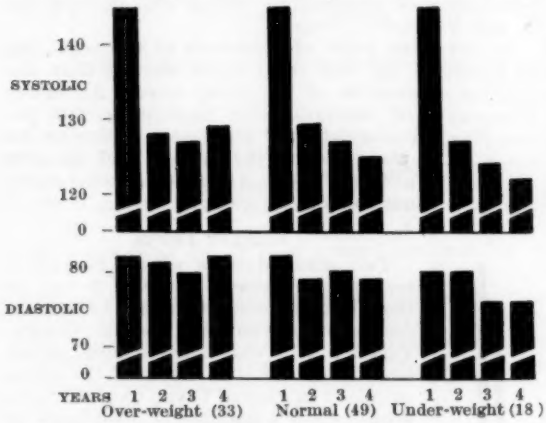

FIG. 1.—Showing blood pressures on entry and in subsequent years of 100 candidates whose systolic pressures were 140 and over on entry, divided into body-build groups.

examination, three more at the end, three before rotation in the assessing-room, and one after, making ten in all. The importance of this repeated examination before forming any conclusion as to the significance cannot be over-emphasised. Stocks and Karn [1] state that if allowance be made for the rise associated with pulse-rate that the emotional factor is an unimportant one. With this I am unable to agree. Candidates are constantly admitted into the Royal Air Force with systolic pressures of 140 and over, who have slow pulses and a high degree of cardiovascular efficiency as judged by R.A.F. tests and standards. In order to ascertain what alteration occurred in blood pressure after entry, 100 cases of accepted candidates were taken whose systolic pressures averaged over 140 on acceptance and their blood pressure at the annual medical examinations during their second, third, and fourth years extracted. Of the original 100, 92 proved successful pilots over the full period. Ten had diastolic pressures of 90 and over on entry and seven out of these were over-weight. Fig. 1 illustrates these results. Although the pressures of the three body-build groups all fall sharply in their second year, this is most pronounced in the under-weight group which falls below the average of the R.A.F. in the fourth year. The over-weight group shows a tendency to rise in the fourth year and the normal-build group is intermediate. Table VI. shows the effect of grouping

TABLE VI.—*Fit Candidates shown in Fig. 1, Grouped According to Diastolic Pressures*

Diastolic.	Number.	First year (entry).	Second year.	Third year.	Fourth year.
70 and below	9	143/69	122/74	123/75	124/78
71–80 ..	38	144/78	129/79	126/79	126/79
81–90 ..	45	145/85	128/79	126/79	126/79
Over 90 ..	8	148/95	132/85	130/82	128/81

them according to diastolic pressure on entry. Those with diastolic pressures of 70 and below on entry increase the same amount from their second to fourth years as those with diastolic pressures of 90 and over fall. Those with diastolics between 71 and 90 settle down at their final figure of 79 in their second year.

A further illustration is afforded of this emotional factor in the rotation test. This consists of rotating the candidate in a suitable chair ten times in 20 seconds, and taking blood pressures immediately before and after. The lowest of three blood pressures is recorded before rotation. It is open to discussion as to whether the pressures obtained after rotation are purely emotional or not. My own view is that they usually are, but those taken when seated on the chair before the test must unquestionably be so. Fig. 2 shows the results in 118 cases. Of these 85 were accepted and 33 rejected on account of cardiovascular inefficiency. A further analysis of this group is shown under body-build. All the rejected cases were normal healthy adults without organic disease, but not up to R.A.F. standards. The marked accentuation of the body-build factor in these cases is well shown, particularly in regard to the low diastolic pressure of under-weight candidates.

It has been the practice at the R.A.F. Board in recent years practically to disregard systolic pressures in young candidates, provided that the diastolic is below 80 and the cardiovascular efficiency good. Cases whose diastolic is between 80 and 90 are considered on their merits, due attention being paid to the degree of cardiovascular efficiency they possess and their body-build, and when the diastolic exceeds 90, cases are seldom accepted without renal efficiency investigation and evidence of exceptional all-round efficiency in addition. It may be argued that the emotional excitement of a stiff medical examination, such as that at the Central Medical Board, is far greater than that of the ordinary one, but the medical officers take particular care to reduce this to a minimum and the very type of case in which one would expect an exceptional emotional response—namely, the highly strung, emotional neurotic—seldom selects the Royal Air Force as a career. Prolonged mental stress seems to have little effect on blood pressure in healthy young adults. Thus 49 cases of psycho-neurosis, mainly of the anxiety type, in pilots invalided from the service for this reason, had practically the same blood pressure on leaving (130/82) as on entering the service (131/81). This may be due in part to the high proportion of under-weight cases (20) among whom raised blood pressure is rarer than in the over-weight groups.

THE ENDOCRINE FACTOR

Enlargement of the thyroid in healthy young adults seems to be accompanied by a slight increase in both systolic and diastolic pressures. Thus in 60 cases with definite uniform enlargement, 46 showed well-marked signs of cardiovascular inefficiency, although in the complete absence of symptoms they could hardly be regarded as cases of hyperthyroidism. Their blood pressures averaged 143/82 compared with 139/79 of the cardiovascularly inefficient cases shown in Table V. The remaining 14 cases averaged 136/82 compared with the pressures of 131/78 of fit candidates on the same Table. Enlargement was twice as common in under-weight as in over-weight groups.

Physiological evidence seems to favour the increase of adrenaline secretion under excitement, but it seems probable that such excitement must be fairly intense before the adrenal factor comes into play. Thus the raised pressures of the unfit cases under rotation shown in Fig. 2 might be due in part to adrenaline. Apart from the thyroid and adrenals, there is singularly little clinical evidence that ductless glands play an important rôle in the blood pressure of healthy adults. As Meakins [6] says, summing-up the position as a whole:

"The literature of the past few years contains serious articles in which practically every known ductless gland is claimed as a cause of either increase or decrease in blood pressure. . . . Until more critical clinical and experimental evidence is forthcoming, the clinical significance of blood-pressure changes in diseases of the ductless glands may be, on the whole, disregarded, except in thyroid disturbances and *possibly* in a guarded fashion in those of the suprarenal."

ALBUMINURIA AND GLYCOSURIA

Albuminuria.—A series of 90 investigated cases of functional albuminuria among candidates showed that it is twice as common in the under-weight as in the over-weight groups, and the percentage of cases of cardiovascular inefficiency was 46 per cent. compared with the normal of 17 per cent., shown in Table V. Allowing for these factors, blood pressures were practically identical with those shown in this Table.

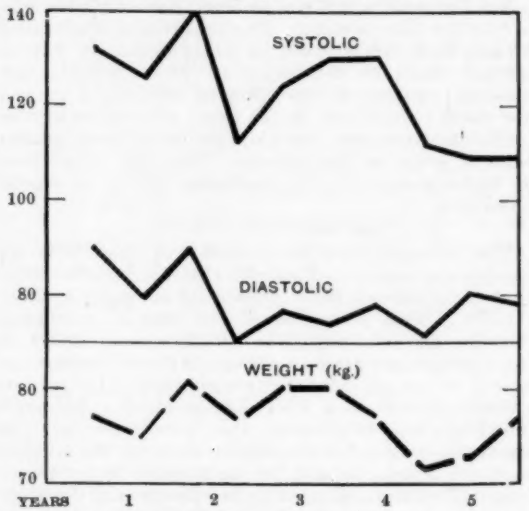

FIG. 3.—Showing the close relation of varying body-weight and blood pressure.

Seventy-nine cases of *glycosuria* of the renal, lag or combined lag and renal types showed that the main characteristics of the group were: An undue percentage of cardiovascular inefficiency (50 per cent.) and over-weight (38 per cent.). Allowing for these factors the systolic and diastolic pressures both averaged 3 mm. above normal for the group.

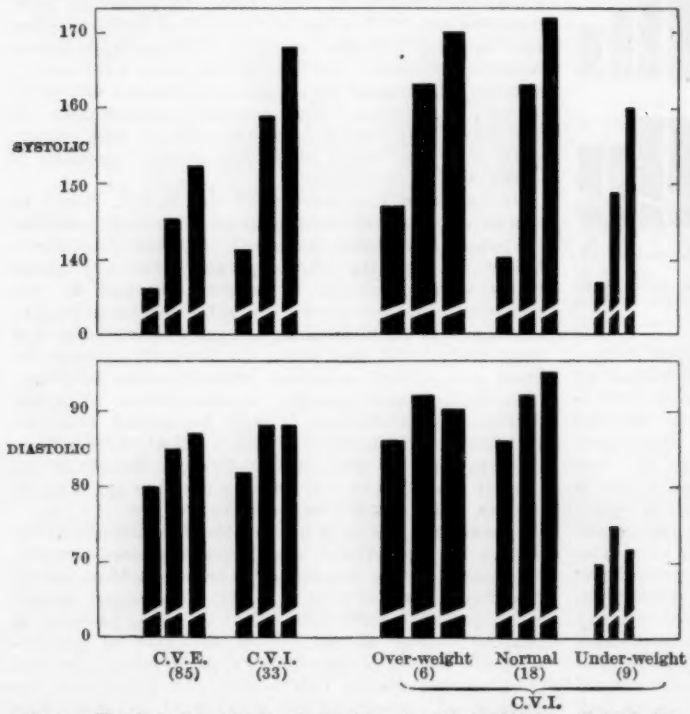

FIG. 2.—Showing the effects of rotation in 118 candidates, divided into groups of cardiovascular efficiency (C.V.E.) and inefficiency (C.V.I.). C.V.I. cases further subdivided into body-build groups. In each group of three: 1st col. = blood pressure during examination; 2nd col. = blood pressure in rotating chair just prior to rotation; and the 3rd col. = blood pressure immediately after rotation.

SCARLET FEVER

Two hundred cases with a history of scarlet fever showed a rise of 2 mm. in the diastolic pressure in all body-build groups, but no change in systolic pressure. This is a little suggestive of unsuspected renal involvement in a few of the cases, especially in view of Group Captain H. E. Whittingham's findings in 2000 cases of renal efficiency overhauls in healthy young adults (unpublished), that there is a much higher degree of renal inefficiency than normal among cases with a history of scarlet fever.

EFFECTS OF CLIMATE

W. P. Chamberlain [7] found that systolic pressures of Americans in the Philippines differed little from those of Americans at home. The lowest readings obtained were in the first three months of residence and at the hottest time of the year, and showed a difference only of 3 mm. below normal. Roddis and Cooper,[8] in 173 cases in the U.S. Navy in the tropics, found an average of 116/74 which they claim, erroneously, to be 10–15 mm. below normal. The truth of the matter appears to be that blood pressure is affected by residence in hot countries, provided the heat is sufficiently intense. Thus the average for R.A.F. pilots abroad for 1932 was 122/76 compared

with 125/77 of those at home. Moderately warm countries, such as Palestine, Malta, and Egypt, gave average readings in the hot weather among 308 cases of 125/77, but pressures taken under similar conditions in the much more trying climates of Iraq and India gave readings of 118/75 in 337 cases.

When the many factors specified above are considered, as well as the fact that blood pressure is lowest in the morning and rises as the day goes on, and there is in addition a temporary rise after meals, it seems that there is little likelihood of obtaining constant readings in the same individual over a period of time. To ascertain this point 71 cases of professional civil pilots were taken, whose readings had been recorded at consecutive six-monthly intervals for five years. As a class they naturally possessed a high degree of physical

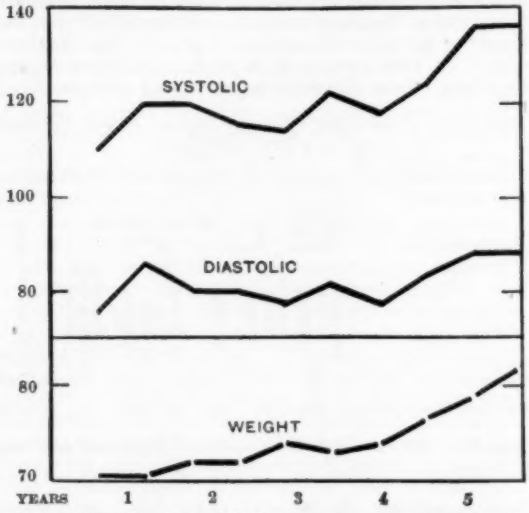

FIG. 4.—Showing rise of blood pressure accompanying rise of weight.

efficiency and they were all examined before lunch in the same surroundings, although not usually by the same medical officers. An average of each individual's ten readings of systolic and diastolic pressures was made and allowances of ± 10 per cent. and ± 5 per cent. of such mean normals made. As an instance, if the average blood pressure was 120/80 the limits allowed were 132–108 systolic and 88–72 diastolic under the 10 per cent. allowance, and 126–114 and 84–76 respectively under the 5 per cent. allowance. Results obtained are shown in Table VII., and show that on the whole, blood

TABLE VII.—*Showing the Percentage Deviation from their own Mean Normal Pressures in* 71 *Cases of Civil Pilots Examined Six-monthly for Five Years*

Systolic.		Diastolic.	
Within ± 5 per cent. of mean normal.	Within ± 10 per cent. of mean normal.	Within ± 5 per cent. of mean normal.	Within ± 10 per cent. of mean normal.
76 per cent.	97 per cent.	70 per cent.	92 per cent.

pressures in physically fit individuals are reasonably constant. It was found that marked variations in weight frequently produced closely corresponding alterations of both systolic and diastolic pressures. Fig. 3 shows a good instance of this. Fig. 4 shows a rising blood pressure with increasing weight, and Fig. 5 shows the little variation that may occur when the weight remains constant.

ARTERIAL HYPOTENSION

Systolic pressures below 110 have been generally regarded in the literature as constituting cases of hypotension. Friedlander,[9] in his treatise on this subject, states that in many instances it is compatible with perfect health and quotes American figures to show that approximately 3 per cent. of healthy young adults are hypotensives. In this country Rolleston [10] has stated that among athletes at Cambridge blood pressures below 110 are relatively common. E. N. Chamberlain [11] found 15 cases out of 60 among healthy medical students and doctors with systolic pressures below 110, and disagrees with Halls Dally [12] that subjects of low blood pressure are almost invariably of poor physique and incapable of sustained physical effort. In the R.A.F. during the years 1927–1931 inclusive the average percentage of hypotensive cases among fit pilots was 3 per cent. (at home 2·6 per cent. and abroad 4 per cent.). All cases in this period whose details on entry were available were analysed. 195 cases showed the results tabulated in Table VIII. Points of interest are :—

(1) The body-build on entry shows three times as many under-weight as over-weight cases, although as a class they put on weight after entry and this disparity largely disappears. Their weight in the R.A.F. averaged 67 kg. compared with the general average of 70, and their height was 174 cm. compared with the normal of 175.

(2) Blood pressure on entry was 121/75. Only 15 cases had at that time systolic pressures below 110, while 45 had pressures of 130 or over, and there were 5 cases with pressures of over 140. The normal emotional response is responsible for this, and the probability of any particular case being

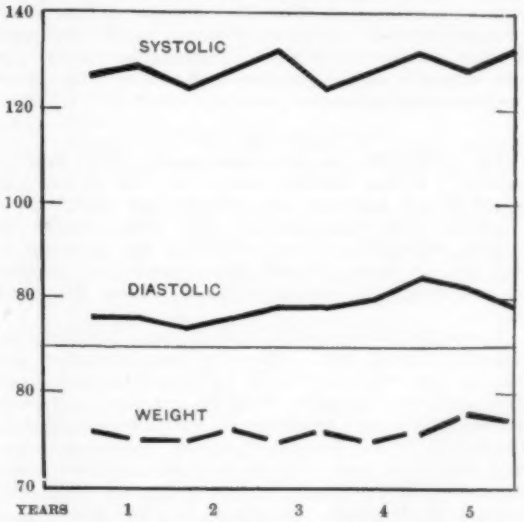

FIG. 5.—Showing uniform weight and blood pressure.

normally a hypotensive must be gauged largely on the diastolic pressure. For some years it has been the practice at the R.A.F. Board to regard all cases with diastolic pressures in the region of 70 and below as "concealed hypotensives," and such cases have not been accepted unless they showed a higher degree than normal of cardiovascular efficiency. There are in fact two classes of hypotensives :—

(1) Those whose characteristics are those of low-grade physical and mental stamina, associated with liability to

dyspepsia, giddiness, and fainting attacks, the cause of which is probably, in the main, poor vasomotor tone.

(2) Those possessing a high degree of cardiovascular efficiency who, although as a class are also under-weight, nevertheless are physically efficient to a high degree.

These two classes can as a rule be easily distinguished by the medical history and the relative degree of cardiovascular efficiency they possess.

TABLE VIII.—*Showing Pulse-response Test and Body-build, during Service and on Entry, in* 195 *Cases of Hypotension among Fit Pilots*

—	Body-build (number of cases).			Pulse-response test.				Blood pressure.
	Over-weight.	Normal.	Under-weight.	Sitting.	Standing.	After exercise.	Seconds to return to normal.	
On entry ..	26	90	79	69	77	101	28	121/75
(1) Whilst serving systolic 105–109	34	55	31	68	75	96	21	107/70
(2) Whilst serving systolic 104 and under	13	44	18	69	77	96	23	101/67
Average for fit pilots (1925–1932)	73	78	100				23	124/78

(3) Pulse-response tests whilst in the service, even among the 75 cases whose blood pressure averaged 101/67, are distinctly better than that of the average pilot. Out of the 75, 37 had systolics of 100 or below.

The importance of appreciating the fact that hypotension even below 100 mm. Hg can, and frequently does, coexist with a high degree of physical efficiency is especially important during illness, as Chamberlain [11] has pointed out. He very rightly emphasises the point that the presence of low blood pressure in disease must be accepted as an expression of that disease only with considerable caution, in the absence of information concerning the blood pressure during health.

RAISED BLOOD PRESSURE

The term arterial hypertension has been applied generally in the literature since the war to cases in which blood pressure was 140/90 and over. It is doubtful, however, whether this term should be applied clinically in such relatively low pressure as this, so the term "raised blood pressure" is used in preference in dealing with the cases discussed below.

Among fit pilots examined at the annual medical examination during 1927-1931 inclusive, there are 6 per cent. yearly with systolics of 140 and over, and 2 per cent. with blood pressure of 140/90 and over. All cases whose details were available on entry were analysed. Table IX. gives details of blood pressure, pulse-response tests, and body-build in 438 of these cases on entry and during service compared with the average of fit pilots. Points of interest are:—

(1) Body-build of both classes on entry shows the normal proportion of over-weight and under-weight groups, but when examined in the Royal Air Force the ratio of these groups is over 3 to 1 in Class I., increasing to 5 to 1 in Class II. where diastolics are 90 and over. This is in marked contrast to the body-build of hypotensives shown in Table VIII. The average height was the normal for fit pilots (175 cm.), but weight averaged 71 kg. in Class I. and 73 kg. in Class II., compared witht he normal figure of 70.

(2) Blood pressures in both classes on entry were above the normal for fit candidates (131/78) and in Class II. the diastolic was higher than in Class I.

(3) Cardiovascular efficiency, although normal on entry, was poorer on the whole during service than the average for serving pilots. Here again there is a marked contrast between these results and those of the hypotensive class.

Obesity is the essential factor concerned in over-weight individuals and these figures show the close relation that exists between raised blood pressure and obesity.

The importance of the diastolic pressure as a means of distinguishing, on entry, between those who will probably have normal or low blood pressures under normal conditions and those who are cases of potential high blood pressure has already been discussed. When it comes to the consideration of blood pressure taken under the more normal conditions of service, the height of the diastolic pressure is still of equal importance. In 1932 there were 6 per cent. of cases among fit pilots whose diastolics were 90 and over, with an

TABLE IX.—*Showing Cases of Raised Blood Pressure among* 438 *Fit Pilots*

—	Body-build (number of cases).			Pulse-response test.				Blood pressure.
	Over-weight.	Normal.	Under-weight.	Sitting.	Standing.	After exercise.	Seconds to return to normal.	
Class I.: 438 *cases with systolic pressures of* 140 *and over*								
On entry	112	225	101	73	81	105	28	137/81
On exam. in service	193	189	56	75	80	104	25	143/84
Class II.: 138 *cases with blood pressure* 140/90 *and over only*								
On entry ..	36	67	35	72	81	105	29	136/83
On exam. in service	66	59	13	75	80	104	26	144/93
Average for fit pilots (1925–1932)	73	78	100				23	124/78

average systolic of 137. In other words, there are many cases in which there is a disproportionate rise in the diastolic pressure compared with the systolic. It is the practice at the R.A.F. Board in all cases with persistent diastolic pressures of over 90 to carry out a thorough investigation, including radiography of teeth and sinuses and a full renal efficiency overhaul. Irrespective of the height of the systolic pressure, such cases should be regarded as possible potential arterial hypertensives in the future and treated as such, bearing in mind that adequate treatment in the early stages is much more likely to prove effectual than at a later date.

PULSE PRESSURE

Normal limits are usually stated to be between 40 and 50 mm. Hg. Variation in pulse pressure depends on the height of the systolic pressure. Thus in Table VIII. the pulse pressure of hypotensives whose average blood pressure was 101/67 was 34. The average for fit pilots is 47 and in 31 cases in 1932 whose average systolic was 155, the diastolic was 90, giving a pulse pressure of 65. Although as a general rule it may be said that within strictly normal limits the smaller the pulse pressure the higher the degree of cardiovascular efficiency, this is by no means always the case, and, provided that the cardiovascular efficiency is above suspicion, relatively large pulse pressures are not necessarily of signifiance even when the systolic is low. Thus in 1932, among fit pilots there were 302 cases

(12 per cent.) whose diastolics were below 70, the actual blood pressure averaging 115/66, giving a pulse pressure of 49. Small pulse pressures with a high diastolic and normal systolic are quite another matter. Thus a persistent blood pressure of 125/95 is probably pathological and immediately suggests such factors as obstruction to the cardiac output, as in mitral stenosis, an impaired myocardium, or renal inefficiency.

Life assurance figures show that arterial hypotensives have a better expectation of life than normal. This after all is to be expected. They are mainly free as a class from most of the cardiovascular catastrophes of later life and the unfit hypotensive, in view of his poor physique, tends to follow a sedentary occupation and is less exposed to the risks attendant on an active open-air life. Provided that cardiovascular efficiency is above normal, systolic pressures of 100 or even less are consistent with perfect health. The question of the upper limits of normal blood pressure is a much more difficult problem. Symonds,[3] looking at the matter from an actuarial angle, states that systolic pressures of 140 under 40 years of age are suspicious and those of 145 probably pathological, and shows that mortality ratios confirm this view. As Dawson [13] has said: "If clinicians were to accept these views, they would indeed have to be gloomy prophets." It seems probable that when insurance companies as a whole come to realise more fully than they appear to have done in the past, the importance of the association of a high systolic and a low diastolic pressure as characteristic of transient emotion, particularly in young adults between 18 and 25, they will not continue to regard all pressures of 140 and over with their present degree of prejudice. Symonds regards diastolic pressures of over 94 as probably abnormal. Dawson [13] considers that under 25 years of age the diastolic should not be above 85, and from 25 onwards he prefers not to see it above 90. A *persistent* diastolic of over 90 in any adult irrespective of age or the height of the systolic pressure appears to me to call for investigation. As Halls Dally [14] has pointed out: "The diastolic pressure is a measure of the burden which the heart arteries and aortic valves must continuously bear and from which there is no escape, the systolic is only an intermittent and superadded load."

It has been shown that hypotension is relatively more common in the under-weight groups, as is raised blood pressure in the over-weight groups. Obesity per se is, however, no justification for raised blood pressure. There are many cases of low blood pressure in the over-weight groups and it is only the relative increase in cases of raised blood pressure as we go from the lightest under-weight group to the heaviest over-weight group that increases the average pressure of the groups as a whole. McDowall [15] considers that raised blood pressure may be due primarily to active contraction of arterial muscle which subsequently, as a physiological result of overaction, would hypertrophy and tend to degenerate.

A present-day view of hypertension is that it is a constitutional disease with a familial tendency and this is probably equally true of hypotension. Assuming this, at one end of the scale there will be a group in whom arterial muscle will tend to over-react to a given stimulus and at the other end of the scale there will be a tendency to under-reaction to the same stimulus. The added strain to the circulation as a whole in cases of obesity would cause its maximum effect on the over-reactive group. Similarly, in cases of toxæmia, which has been ascribed as a cause of both hypo- and hypertension, different results might be expected to ensue. Only in this way can one account for the disappointing results so often obtained on elimination of focal sepsis in cases of threatening hypertension.

Reference has already been made to the small part that prolonged mental stress seems to play in producing persistent raised blood pressure among healthy young adults below 40.

Granted that a tendency to hypertension is the manifestation of a constitutional diathesis, the importance of thorough investigation at an early stage, before the advent of secondary changes in the arterial muscle, is obvious, and the earlier the treatment, the better the results are likely to be.

Summary of Conclusions

(1) Age between 18 and 40 and proportionate height and weight have little effect on blood pressure.

(2) Abnormal body-build is a pronounced factor, blood pressure varying from 118/75 in the lightest under-weight group to 132/82 in the heaviest over-weight group.

(3) Cardiovascular inefficiency, as judged by R.A.F. tests and standards, accentuates these body-build differences.

(4) The emotional factor on first examination is of great importance. It affects mainly the systolic pressure. Although most marked in the unfit, it is comparatively common in fit candidates and its transitory nature is shown by following up such cases during their service. The height of the diastolic pressure is of great value in determining whether these cases are potential cases of raised blood pressure. The psychoneuroses seem to play little part in the causation of raised blood pressure in healthy young adults.

(5) Enlargement of the thyroid in healthy adults is associated with a high percentage of cardiovascular inefficiency and after allowing for this, both systolic and diastolic pressures are slightly above normal.

(6) Functional albuminuria has no effect on blood pressure, but glycosuria of the renal or lag type causes a slight rise of both systolic and diastolic pressures. Cases with a past history of scarlet fever show a slight rise in the diastolic pressure only, probably due to unsuspected renal involvement in a small percentage of such cases.

(7) Extremely hot climates tend to lower blood pressure, but moderately warm countries produce no effect.

(8) Hypotension, even when the systolic pressure is below 100, can be present in perfect health. The characteristics of the fit hypotensive are a higher degree of cardiovascular efficiency than normal, and a tendency to under-weight. It is rarely met with on first examination owing to the emotional factor, but a diastolic of 70 or below is always suggestive of its presence under normal conditions. Three per cent. of fit pilots are hypotensives.

(9) Raised blood pressure—i.e., cases with systolic pressure of 140 and over—constitute 6 per cent. of fit pilots. Two per cent. have blood pressures of 140/90 and over. Their characteristics are a tendency to over-weight and poorer cardiovascular efficiency than normal. Blood pressure is higher on entry than in the normal fit candidate.

(10) Pulse pressure varies with the height of the systolic pressure, but relatively large pulse pressures with a low systolic pressure may coexist with perfect health. Small pulse pressures with a normal systolic and high diastolic pressure are suggestive of a pathological cause and all cases of a persistent diastolic pressure over 90, irrespective of the height of the systolic pressure, require investigation.

(11) The tendency to either hypo- or hypertension is probably a constitutional one and such factors as

obesity and toxæmia, when they affect blood pressure, probably do so by emphasising this constitutional tendency.

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CLINICAL SYMPTOMS OF ADDISON'S DISEASE OCCURRING IN THE COURSE OF PULMONARY CARCINOMA

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WE are fully aware that carcinoma of the lungs is a disease which has attracted much attention of late, and many important papers have been published upon the subject, but the two cases which we describe in this paper seem worthy of record if only because, *during their lifetime*, they showed symptoms which enabled us to diagnose that the suprarenal glands were invaded by secondary growth. The occurrence of metastases in these organs is fully recognised by writers upon the disease from the evidence of numerous post-mortem examinations. To quote only some of the more recent papers, Kikuth found secondaries in the suprarenals in 21 out of 240 cases of carcinoma of the bronchus, Maxwell and Nicholson in 20 out of 100 cases, and Dosquet (quoted by Boyd) in 21·8 per cent. of cases in the literature.

Five cases of Addison's disease attributed to primary suprarenal neoplasms have been reported by Besnier, Mettenheimer, and Pitman, who give us no clue as to the nature of the tumour, by Riemer, who classifies his case as one of "paraganglioma," and finally by Hertz and Secher, who call theirs "neuroblastoma sympatheticus."

Records of secondary neoplasms giving rise to Addison's disease are remarkably scanty when one considers the frequency with which these organs are involved by malignant growths. In this connexion Guttman, in his recent comprehensive survey of Addison's disease, concludes that "bilateral metastatic tumours are frequent and often extensive, but rarely give rise to symptoms of Addison's disease."

Ball and Fleiner have each described this occurrence in a case of carcinoma of the stomach, Cayley in a case of "medullary cancer of the uterus," Bannwart in a case of "lymphangio-endothelioma peritonei metastaticum," and finally, Warthin, Crowe, and Jackson in a case of lymphosarcoma.

It is, however, a point of great historical interest that Addison himself, in his classical paper on the Constitutional and Local Effects of Disease of the Suprarenal Capsules, drew attention to the occurrence of cancer of the suprarenals associated with cancer of the lungs, although he expressed no opinion as to the primary site of the neoplastic process. In the course of the description of his sixth case he mentions a patient "sixty years of age, who presented, in a strongly marked degree, the indications of diseased renal capsules," and he continues: "My belief was that the capsules were affected with malignant disease, and that probably some other structures about the posterior mediastinum might have been in a similar condition, as the patient had slight œdema of both the upper extremities, whilst the lower limbs remained free."

In the light of our present knowledge it can hardly be disputed that a patient who presented the clinical manifestations of Addison's disease and signs of obstruction of the superior vena cava was probably suffering from a primary carcinoma of the lung with suprarenal metastases.

Addison's seventh case was that of a woman of 60 years. A malignant growth involved both the left breast and the left lung "by direct continuity of structure." Both suprarenal capsules were extensively destroyed by growth. The primary site of the neoplasm is here in doubt, especially as breast carcinomata may give rise to suprarenal invasion, but it is unusual for a breast tumour to invade the lung "by direct continuity," and we might have expected, had the cancer arisen in the breast, some deposits in the right lung, which was, however, found to be "healthy." In this case also the likelihood is that the cancer began in the lung.

Finally, in the eleventh case, a patient who had died of cancer "affecting the thoracic parietes, and extending through the lungs. Quite unexpectedly there was found extensive disease of one of the suprarenal capsules, the organ being very much enlarged, and converted into a hard mass of apparently carcinomatous disease." This patient, who was "naturally of a fair complexion" presented "a freckled and dingy appearance, with a slight brown discoloration at the root of the nose and at each angle of the lips."

The cases we relate showed various other clinical manifestations of great interest—as, for example, obstruction of the superior vena cava and hypertrophic pulmonary osteo-arthropathy—which will become apparent from the description which we give of their course.

THE FIRST CASE

A woman, aged 48, a widow, who had been much overworked, was admitted to hospital on May 20th, 1932, complaining of cough and pain over the right side of the chest for three months. She had lost over a stone in weight in the course of five months, and she had become progressively weaker for three weeks. For about a year she had suffered from fleeting pains in the knee- and ankle-joints, these had been thought to be of rheumatic origin, and had been relieved by aspirin. Her cough, though more troublesome recently, had been present for a number of years. Her past history was otherwise free from any relevant illness. Her family history was good; she had five children alive and in good health. Her husband, however, died of "consumption."

State on admission.—The patient was a pale woman, with light brown hair and blue eyes, her skin was loose and wrinkled, and her superficial bony points unduly prominent. She had a frequent short cough, with a somewhat scanty mucopurulent expectoration. Her hands and feet presented

a striking appearance, for there was not only well-marked clubbing of the fingers and of the toes, but also painful enlargement of all the articulations of the fingers and of the hands, including the wrist-joint. Similarly, the elbow-, knee-, and ankle-joints were painful and swollen, and movement was in every case limited probably, to a large measure, owing to the pain.

Examination of the chest showed signs of consolidation at the right apex, movement being diminished, whilst the percussion note was impaired, the breath sounds were of the bronchial type, and whispering pectoriloquy was elicited. There was also an evening rise of temperature to 100° F. At this stage it seemed probable that the case was one of tuberculous pneumonia. The first radiological examination revealed a homogeneous opacity of the right upper lobe with a sharp lower margin, the lung fields were otherwise normal in translucency. Six examinations of the sputum, carried out over a period of one month, proved negative for tubercle bacilli. A tentative diagnosis of carcinoma of the bronchus was then made, and bronchoscopy was carried out. Marked œdema of the right bronchus was found, and this limited the extent to which the bronchus could be explored visually.

The findings were held to be consistent with a bronchial carcinoma, and deep X ray therapy was begun on July 5th, 1932. After the first three applications, given on consecutive days, she became cyanosed, very dyspnœic, and was found to have developed signs of a pleural effusion, with displacement of the heart to the left. Aspiration of the fluid on July 18th was followed by a slow improvement in the general condition.

During the following days it was noticed that the patient was becoming pigmented, the pigmentation being especially well-marked over the face, which showed a patchy brown discoloration over the cheeks and at the angles of the mouth and of the nose. The mucous membranes were pale but not discoloured. Systolic blood-pressure readings, which had been taken daily since the patient's admission, had always been at some figure below 100 mm.Hg, figures between 78 and 90 mm. being usual. The patient then showed a complete Addisonian syndrome with marked asthenia, pigmentation, and low blood pressure, and we concluded that the suprarenal glands were invaded by malignant growth.

Course of illness.—On August 28th she became very confused, and incontinent of urine and of fæces. A cerebral secondary growth seemed the most likely explanation of this, although there were no papilloedema or other signs of an increased intracranial tension. About the same time she complained of pain in the right knee, which was found to be distended with a large effusion. This fluid cleared up in the course of a week, but she shortly after suffered from a painful effusion in the right elbow-joint, which lasted almost a fortnight.

She pursued a slow downward course, complaining of severe pain in various joints and in the lumbar spine. The depth of the pigmentation increased steadily. A recurrence of the pleural effusion necessitated repeated aspiration of the chest, when as much as two pints of a clear, straw-coloured fluid were removed on one occasion. During the last week, dilated veins over the front and back of the upper part of the thorax became apparent, and a tender subcutaneous nodule was felt under the right breast.

She died on Oct. 10th, more than five months after her admission to hospital.

POST-MORTEM FINDINGS

Respiratory system.—Larynx normal. The lower part of the trachea and the main bronchi on both sides were very congested. The bronchus to the right lower lobe was congested and contained some pus. The bronchus to the upper lobe on the right side was almost obstructed by a tumour arising in its wall and extending outwards into the lung substance of that lobe, which was almost completely replaced by a large mass of partly necrotic tumour about 8 cm. in diameter (Fig. 1). This mass was adherent to the chest wall. It extended upwards into the root of the neck and forwards into the right parabronchial lymphatic glands, which were much enlarged. It was by extension of this point that the tumour caused the constriction of the superior vena cava. The lower lobe on the right side was almost completely collapsed and there were about 700 c.cm. of slightly blood-stained fluid in the right pleural cavity. The left lung was congested and contained many areas of broncho-pneumonia.

Circulatory system.—Several secondary deposits were found in the walls of the pericardial sac close to the base. There was no excess of pericardial fluid. The heart was of small size and the myocardium rather brown. There was slight atheroma of the coronary arteries and of the aorta. The upper end of the superior vena cava and the lower end of the innominate veins were infiltrated and markedly constricted. The lumen of these vessels was reduced to less than one-tenth of the normal. There was, further, recent antemortem thrombus effecting a complete obstruction of the superior vena cava.

FIG. 1.—Main bronchi and right lung from Case 1 seen from behind.

Suprarenal glands.—Both glands were much enlarged and infiltrated with tumour. The infiltration appeared to commence in the medulla and gave rise to an irregularly spherical mass about 2 cm. in diameter over the upper surface of which some adrenal cortical tissue was stretched. This cortical tissue exhibited its customary ochre and brown lamination.

Other organs.—The liver was rather small, but otherwise normal. The pancreas contained several nodules of growth which appeared to have arisen by extension from lymphatic glands behind. There were several small secondary deposits in the spleen. The mesentery was greatly thickened by metastatic deposits, which compressed the tributaries of the superior mesenteric vein and infiltrated the wall of the small intestine along its mesenteric attachment. There was a secondary deposit in the lower pole of the left kidney. The pre-aortic group of lymphatic glands were infiltrated. There was an extensive area of softening occupying the greater part of the left frontal lobe. Close to this area a small metastasis was found.

Microscopical examination.—The bronchial tumour was an adenocarcinoma. The tumour mass replacing the medulla of the suprarenals consisted of the mucus-secreting cells of an adenocarcinoma.

THE SECOND CASE

The second patient, aged 49, who was a widow, and like the first, had been overworking, was admitted to University College Hospital on Sept. 15th, 1932, on her medical attendant's recommendation, as he had unsuccessfully treated her during the previous six months for a persistent cough, loss of weight, generalised weakness, and anorexia. She had

repeatedly refused to enter hospital, but was finally driven into doing so by persistent pain in the left hip, radiating down the inner aspect of the thigh to the level of the calf. Her previous history disclosed no relevant illness and she was the mother of five healthy children.

State on admission.—The patient showed obvious signs of recent loss of weight. Her complexion was pale, and the slight dyspnœa present at rest became gross breathlessness on slight exertion, for instance, during examination of the chest. She was not cyanosed. Her fingers showed early clubbing, the nails being curved in the longitudinal axis, and the normal depression of the root of the nail being obliterated. She had a frequent short, grunting cough, but great difficulty was experienced in collecting a sample of sputum as she was in the habit of swallowing after each bout of coughing. Her weakness was such that she could not sit up without the assistance of the ward sister. We formed the impression that the generalised asthenia was greater than the patient's condition would have led us to expect.

FIG. 2.—Right lung from Case 2 seen from behind. Note bronchial ulcer opening into a cavity in the upper lobe.

Inspection showed dilated anastomotic veins over the front of the thorax and of the abdomen, congestion of the veins of the neck, and dilated veins over the posterior aspect of the thorax at the level of the spines of the scapulæ. The blood was shown to be flowing downwards in the superficial veins towards the tributaries of the inferior vena cava. A physical sign of some interest which was also noted, consisted of a distinct impulse on coughing, easily visible in the posterior thoracic veins. During the phase of forced expiration the veins increased in size and became very tense, whilst other venous channels, not visible during quiet respiration, became apparent. There were signs of consolidation to the right of the sternum, extending from the first rib to the third costal cartilage, longitudinally, and for about three inches laterally. The percussion note was impaired over this area, the breath sounds were bronchial in character, and the vocal resonance much increased.

The left hip-joint was very painful, and it was not possible to move the left leg passively without causing great pain.

A radiogram of the chest showed a dense opacity extending from the mediastinum out into the upper third of the right lung. There were some adhesions between the base of this lung and the diaphragm, but the left lung was quite clear. The systolic blood pressure was 80 mm. Hg on admission, and the daily readings were always below 100 mm. This finding, in conjunction with the extreme asthenia, led us to a diagnosis of suprarenal involvement in spite of the absence of pigmentation in this case.

The patient went gradually downhill and died on Oct. 17th, a month after her admission to hospital. Our clinical diagnosis, based on the account of the case which we have given, was as follows: Primary carcinoma of the bronchus. Obstruction of the superior vena cava. Metastases in the suprarenal glands and in the region of the left hip-joint.

POST-MORTEM FINDINGS

Respiratory system.—Larynx normal. The mucous membrane of the lower part of the trachea and of the left main bronchus was hyperæmic and covered with much mucopus. *Right lung:* there were extensive old adhesions obliterating the pleural cavity. The main bronchus was ulcerated in the region of its first bifurcation. The bronchus to the upper lobe was much thickened by growth, and after coursing for about 1 cm. it opened into a large cavity which occupied the greater part of the upper lobe (Fig. 2). The bronchus to the lower lobe was hyperæmic, dilated, and contained greenish-yellow pus. There was a small cavity, 2 cm. in diameter, at the apex of the lower lobe. This cavity, like that in the upper lobe, was filled with gangrenous debris and surrounded by areas of confluent broncho-pneumonia. *Left lung:* there were some areas of broncho-pneumonia in the lower lobe. *Mediastinal glands:* the infratracheal glands were enlarged, congested, and œdematous, but only slightly infiltrated at a point where they came into close apposition to the under aspect of the ulcerated right bronchus. The right parabronchial glands were extensively infiltrated, and they were pressing on the superior vena cava and invading its walls.

Cardiovascular system.—There was a projecting nodule of tumour at the base of the heart on the right side, close to the superior vena cava. The heart was normal with the exception of slight atheroma of the coronary arteries. There was marked constriction (probably to about one-fifth of its normal diameter), of the superior vena cava at a point midway along its course. The constriction was effected partly by compression of the vein, partly by infiltration of its wall. There was no thrombus in the vena cava. The vena azygos major entered above the constriction.

Suprarenal glands.—The left suprarenal was replaced by a large ovoid mass of tumour about 9 × 4 × 4 cm. (Fig. 3). On section of this mass no trace of adrenal tissue could be found. The right suprarenal was not infiltrated by tumour and was of normal size.

Other organs.—There was a secondary deposit in the upper end of the shaft of the left femur, and at this point the bone had suffered a pathological fracture. The intracranial and the intra-abdominal organs were normal.

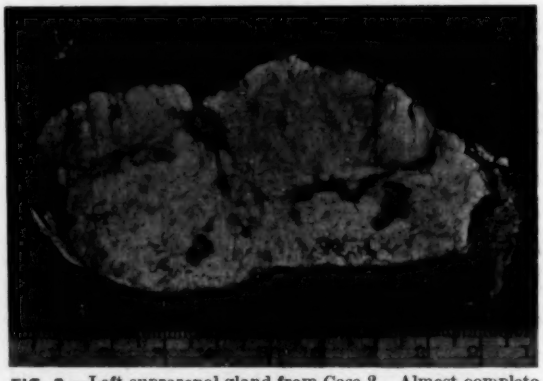

FIG. 3.—Left suprarenal gland from Case 2. Almost complete replacement by tumour. Centimetre markings shown.

Microscopical examination.—The primary tumour was a squamous-cell carcinoma of the bronchus. A section of the right suprarenal showed no evidence of infiltration. The cortex was narrower than normal, and there were fewer pigment cells than usual in the region of the cortico-medullary junction. There were some large fat globules occupying the greater part of the cytoplasm of some of the cells in the zona fasciculata. The cells of the medulla were well preserved. The left suprarenal consisted of secondary squamous carcinoma cells which had undergone necrosis in many places. There was no medullary tissue in the

sections, but a few cortical cells separated by very congested capillaries were to be found at one end of the organ.

COMMENT

Besides the signs and symptoms of suprarenal disease, our cases show an obstruction of the superior vena cava, complete in one case and partial in the other. The first case presented to an unusual degree the signs of pulmonary osteo-arthropathy.

Venous obstruction by a bronchial carcinoma, giving rise to localised œdema or to some distension of superficial veins, is a relatively common phenomenon. Maxwell and Nicholson found a record of such an occurrence in 30 of the 100 cases which they investigated, but complete obstruction of the superior vena cava was observed in four only of their cases. Dana and McIntosh, writing in 1922, were able to trace from the literature only 37 cases in which a carcinoma of the bronchus was proved at autopsy to be responsible for obstruction of the superior vena cava. As they point out that a pulmonary neoplasm is much the commonest cause of venous block in the superior mediastinum, it follows therefore that occlusion of the superior vena cava remains a clinical rarity. It may be produced by pressure on the vein by the primary growth itself or by a secondary deposit. It may also result from the invasion of the wall of the vein by the tumour, as in our second case. Finally, and this is perhaps the commonest mechanism, thrombosis of the vein follows pressure, as in our first case.

The association of clubbing of the fingers with carcinoma of the lungs is well known. Maxwell and Nicholson found this condition in 18 of their 100 cases, and it is interesting to note that they were unable to correlate clubbing of the fingers with the presence of suppurative lesions in association with the neoplasms. In one case they report "an extreme degree of hypertrophic pulmonary osteo-arthropathy." Unfortunately they give no detailed account of this case. Weinberger has described a case comparable to ours as regards the extent and the degree of the bony involvement. Radiograms of his case show marked periosteal thickening of the long bones. His case did not, however, suffer from the recurrent painful articular effusions which were such an outstanding feature of our first case.

The *summary* of this paper need only be short. The title is, in fact, the essence of the matter, and the rarity of the detection of these Addisonian symptoms during life the occasion for the publication of these cases. There is this interesting feature in the contribution, that it brings us in touch with the great Addison, who with much less to help him, had essentially described this clinical syndrome in his classical paper, and we dimly seem to see those splendid days of Guy's Hospital, and to join hands with those great clinicians. For the rest, the widespread metastases of pulmonary carcinoma are illustrated to perfection, and these cases add a little more weight to the insistent questions: Why do these pulmonary growths arise, and are they of increasing frequency?

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HIGH CARBOHYDRATE DIETS IN DIABETES

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The advance made in the dietetic control of diabetes has been so uniformly successful that methods of treatment have become practically standardised. Modern systems of dieting are based on the principles laid down by Schaffer and applied by Woodyatt. The supply of each class of foodstuff is governed by certain definite limitations. The functional incapacity of the patient limits the intake of carbohydrates. In recent years the starches and sugars have usually been reduced to less than quarter of the normal 400–500 g., and although this is a much more liberal amount than was formerly permitted, a valuable source of heat is thereby denied to the patient. It has therefore been the practice to make good this deficiency by supplying extra fat up to 200 g. or more. It has also been customary to restrict the proteins because of their high specific dynamic action, and because they may be partly converted into glucose or into fatty acid substances in the body. Glucose may be obtained by the tissues from all three foodstuffs, while fatty substances can be formed from both protein and fat. On account of the high caloric value of fat (9 calories per g. as against 4 for carbohydrate or protein) it has been considered desirable to include as much as possible in the diet. There is, however, a definite limit to the amount which can be given safely, since fat for its complete combustion requires the simultaneous utilisation of a certain quantity of carbohydrate. In arriving at the best proportion of foodstuffs for a diabetic diet of high caloric value the total available glucose (G.), and the total fatty acid elements (F.A.), must be calculated to give the optimum ratio of 1 G. : 1·5 F.A. Lower rations of F.A. yield fewer calories in proportion to the carbohydrate consumed, while higher values of fat will cause poisonous acetone bodies to appear in the blood and in the urine.

The advent of insulin has permitted no relaxation of these rules if the twin dangers of glycosuria and hypoglycæmia are to be avoided. Insulin is neither a "cure" nor an aid to luxury feeding, and strict weighing of the diet is necessary for patients who take it. The usual practice has been to employ as small a dose of insulin as would enable the diabetic to take a diet of sufficient caloric value for his needs. Certain workers [1] have advocated that the patient might be allowed a more natural amount of carbohydrate by giving larger doses of insulin, but this plan is not generally followed.

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The idea that the "optimum ratio" diets of low carbohydrate and high fat were not the best for the diabetic has recently been challenged. A certain amount of evidence has been brought forward in support of this view, and a new type of diet has been suggested. This contains about double the quantity of carbohydrate previously employed, and the amount of fat is usually considerably reduced. Rabinovitch [2] emphasises that to be successful the diets should contain not more than 50–60 g. of fat (yielding 450–540 calories). It is claimed for this high carbohydrate low fat diet that it is cheaper,[3] that it more closely approximates to a normal diet,[4] and that patients prefer it, being more satisfied and having little desire to exceed the prescribed amounts of carbohydrate. Hyperglycæmia and glycosuria are believed to be more easily controlled [2] on the new diet, though such difficulties seldom occur if the standard diets are properly followed. It has been stated that diabetics do better on the new diet, since they tolerate carbohydrate better than fat, which throws a strain on metabolism.[5] Reduction in blood cholesterol has been claimed,[2 3] and also a decreased tendency to the production of atheroma.[3] With the low fat diet less fat is lost in the stool.

One of the most important claims is that on this diet the patients' tolerance is increased,[5 6 7] and Allen is quoted as showing that an excess of fat tends to lower the tolerance to carbohydrate. Several writers point out the apparently anomalous fact that on the new diet, with greatly increased carbohydrate, less insulin may be required. Most of the authors fail to recognise, however, that the increased tolerance may in large part be the result of a lower caloric intake which, as is well known, does lead to a rise in tolerance. The change in F.A./G. ratio from 1·5 to 0·3, which occurs when the standard diet is replaced by one of the new type suggested, results in a reduction of caloric intake by 40 per cent. Rabinovitch [6] emphasises that the new diets are undernutritional, and Poulton [4] points out the necessity of maintaining the caloric intake at a satisfactory level, and gives about 125 g. of fat to accomplish this.

AN INVESTIGATION OF THE NEW DIET

During the past two years we have had the matter under investigation. Our usual practice in diabetes is to employ standard diets of "optimum ratio" after the preliminary de-sugarising period, aiming at giving sufficient calories for the patient to maintain his strength and to keep his weight a few pounds below the normal. For obese patients, where it is an advantage for them to reduce weight, this plan is usually modified by cutting down the caloric value of the diet. This can most conveniently be done by omitting a certain amount of fat (1–3 oz. of butter) from the standard diets. In this way many of our patients for years have been taking diets of relatively low ratio (e.g., 1 G. : 0·8 F.A.).

The patients chosen as subjects for this investigation have been carefully selected from a large number available, and had all been stabilised for some time on the standard diets. All were insulin cases, and the group included both mild and severe types requiring from 10–120 units of insulin daily. Their ages ranged from 9 to 67, and the known duration of the disease from two to ten years. Of the 29 patients, 13 were treated as out-patients only, while the others were also studied for a time in hospital. The method of investigation was to put each patient for periods of varying length on different types of diet, and at the same time to find out how small a dose of insulin was required to keep the urine sugar-free. During successive periods, diets of high (1·3–1·5) or of low ratio (0·3–0·6) were given alternately. More recently, as the low ratio (low fat) diets were usually deficient in calories, various intermediate values have been employed (0·7–1·2). In all, 208 periods have been observed in the 29 patients.

Change in weight.—Though it is possible for the body to accommodate itself to different levels of food intake, and so to minimise loss of weight, a considerable reduction of caloric value is almost necessarily accompanied by some falling-off in weight. Many of the low ratio diets were relatively low in calories, and it is not surprising to find that more than half the patients lost weight while taking them. In some cases the loss was slight; in others, so great as to necessitate changing the diet.

Patients' opinions.—All the patients, having become accustomed to the relatively monotonous character of the standard diabetic diets, welcomed the opportunity of a change, and especially of being allowed to take more carbohydrate. After experience of the new diets, various opinions were offered by the patients, some preferring one type, some the other. Naturally, many of them would like to have had the benefits of both types, the extra carbohydrate of the new diets and the higher calories of the old. Those individuals who had previously experienced difficulty with the standard high fat diet, owing to nausea or the ready occurrence of ketosis, undoubtedly did better on the low ratio diets. On the other hand, these latter diets were found to have several disadvantages. The Rabinovitch type of diet with a fat content of only about 56 g. was usually unsuitable as a maintenance diet because of its low heat value. Many of the patients became alarmed at the continual loss of weight. Some complained that they felt less strong and less energetic, and became more easily fatigued on the low ratio diets. Others complained of feeling cold, and appeared to be more susceptible to minor infections, and several found that they became unduly hungry soon after the meals. The main objection to the diet is its low caloric yield, which gives rise to weakness and loss of weight in a considerable proportion of cases. On the other hand, one patient believed he was more vigorous and less irritable when taking low ratio diets of from 1500–2100 calories instead of the high fat diet of 3450 calories to which he had previously been accustomed. Almost half the subjects felt better on the older system, and preferred to return to their earlier diets.

Latterly a compromise has been attempted, and this has proved more successful. Diets of intermediate values have been employed, containing 150–160 g. carbohydrate and 100–150 g. fat, and yielding from 2000 to 2500 calories. Many of the patients have felt better on these than on either of the extreme types of diet.

Blood.—Sugar examinations have been regularly carried out in some of the cases, but have not shown any uniform alterations. Estimations of blood cholesterol have not shown any consistent change while the patients were on the lower fat diets.

Fat in stools.—Examination shows that the composition of the fæces tends to follow the character of the diet. The relative frequency of these changes will be seen in Table I.

Insulin requirements.—When the patient is changed from a satisfactory standard diet of optimum ratio to one containing high carbohydrate and low fat, the amount of insulin required is often reduced although the carbohydrate taken may be doubled. Case A (Table II.) illustrates this point. Other patients show

no reduction, or even an increase. Case B, for example, required more insulin on the low ratio diets, but in this case it will be noticed that the caloric value of all the diets has been kept constant, and to attain this a larger proportion of carbohydrate than usual was necessary to make good the caloric loss when the fat was low. From such figures it is at once apparent that the amount of insulin required does not parallel the quantity of carbohydrate taken nor the "G." value of the diet; nor does it bear any close relation to the total calories. As the protein of the diets was kept constant it would appear, therefore, that the fat of the diet participates in drawing on the natural insulin and in determining the dose of administered insulin. That this may be so has already been suggested by Richardson [8] and by Sansum,[9] while others have pointed out that the fats of the diet may influence the insulin requirement indirectly by lowering the tolerance to carbohydrate.[10]

TABLE I.—*Effects of Lower Ratio Diets*

—	Observations.	Reduced.	Increased.	Unchanged.
Insulin	109	61	30	18
Weight ..	91	45	26	20
Blood-sugar ..	50	22	23	5
Blood cholesterol	29	15	9	5
Stool fat ..	19	11	7	1

TABLE II

CASE A

Diet.	Days on diet.	C. (g.)	P. (g.)	F. (g.)	Ratio F.A./G.	Cals.	Ins. units.	Wt. kilos.
1	19	101	73	235	1·5	2811	79	56·9
2	13	202	73	56	0·3	1596	43	55·6
1	18	101	73	235	1·5	2811	52	56·9
2	12	202	73	56	0·3	1596	39	55·6
3	14	109	75	237	1·4	2900	70	55·4
CASE B								
1	10	85	69	210	1·5	2510	48	51·8
2	11	335	69	100	0·3	2516	74	53·8
1	10	85	69	210	1·5	2510	46	52·7
2	11	335	69	100	0·3	2516	72	53·6
3	10	200	69	160	0·7	2516	52	52·9
4	24	150	69	182	0·9	2504	48	53·1
5	12	250	69	137	0·5	2509	64	53·6
1	14	85	69	210	1·5	2510	40	53·0

When the insulin requirement of the patient is correlated with the quantities of the different foodstuffs and with various combinations of these, it is found that the amount of insulin most closely agrees with changes in the total grammes—not calories—of all the food (C+P+F), while, since the protein of the different diets is practically constant, the relation to C+F is almost as good. Table III. gives average figures from 17 cases in which the diets given were of all three classes. The insulin equivalents are obtained by dividing the grammes of foodstuff by the insulin given, and the percentage figure in the lowest line is the relation of the highest insulin equivalent in each column to the lowest. The best agreement is found in the figures for C+P+F. This would imply that the utilisation of a gramme of fat requires practically the same amount of insulin as that of a gramme of carbohydrate, and that one may be exchanged for the other without increase of insulin. Later experience has shown that it is seldom possible to replace 100 g. of fat by more than about 70 g. of carbohydrate without increasing the insulin.

Considerable variation therefore seems to be possible in the composition of diets for use in well-stabilised cases of diabetes. Since carbohydrate and fat seem to make about the same demand on insulin, the omission of a certain amount of fat from a standard high ratio diet should allow the addition of an almost similar weight of carbohydrate. But since fat yields 9 calories per gramme as compared with 4 from carbohydrate, an alteration of this sort will necessarily give a diet of lower calories. This may or may not be of advantage to the patient. It certainly is useful in those who are overweight. In any case, care must be taken that the diet is of sufficient caloric value to allow the patient to feel well and to maintain his weight at a satisfactory value. It must also be emphasised that the older type of diet is physiologically more economical in that it yields more heat for a given weight of food.

TABLE III.—*Average of Foodstuffs in 17 Cases*

Diet.	Ratio F.A./G.	Carb. (g.)	"G." (g.)	C+P+F (g.)	C+F (g.)	Cals.	Insulin units.
Standard	1·4	92·1	163·8	394·1	318·3	2682	52·2
Intermediate	0·9	131·5	191·6	349·8	279·1	2164	43·7
Low ratio	0·4	193·2	241·2	335·3	264·9	1702	52·3
Insulin Equivalents from above data							
Standard	—	1·87	3·13	7·55	6·09	51·3	—
Intermediate	—	3·01	4·38	8·00	6·38	49·5	—
Low ratio	—	3·69	4·60	6·40	5·06	32·5	—
Maximum difference per cent.	—	+97	+47	+25	+26	+58	—

The "insulin equivalents" have been obtained by dividing the insulin into the number of grammes of each of the foodstuffs or combinations of these. The last line of the Table, giving the difference between the lowest and the highest equivalent in each column, shows the degree of uniformity between these values.

SUMMARY

Diets of different carbohydrate-fat ratios have been studied in 29 patients.

It has been found that, if the fat of the diet is considerably reduced, an addition to the carbohydrate is possible without an increase in insulin requirement. This usually results in a lower caloric intake.

Where the fat is reduced and the carbohydrate is greatly increased, to give a diet of the same caloric value an increase of insulin is required.

Diets of intermediate ratio (F.A./G. 1·0–1·2) were often found to be more satisfactory.

Fat appears to make demands on the supply of natural or administered insulin.

The insulin requirement of the diabetic appears to be most closely related to the total grammes of foodstuff (C+P+F) consumed.

It appears that much greater variations in the composition of diabetic diets is possible than has been hitherto allowed.

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BUTYRIC ACID IN THE TREATMENT OF CANCER

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Until recently excision by the knife had no rival in the treatment of cancer of the uterus, and it was in searching for an agent which would clear the cervix uteri from the septic and fungating condition so commonly present in the cases which came for operation that I first fell upon butyrate of quinine.

Applied as a powder or in gelatin capsules to the cancerous surface after a curettage it cleared away the rough edges and improved the condition of the surface. At first it was made rather crudely and the preparation contained free butyric acid. By repeated recrystallisation at a fine-chemical works this was reduced to 2 per cent.; but the applications now proved much less effective, and it seemed likely that the free acid was the chief or only source of activity in the butyrate of quinine where it is held between the microscopic needle crystals. I had long been familiar with the acid and had used it for surface applications, and even to carcinomatous ulcers, but hitherto I found it less useful than the powdered butyrate, because, unlike the powder, it ran all over the surface. To control this I now tried a mixture of kieselguhr powder and butyric acid (40–50 per cent.) in gelatin capsules. These can be placed in a cavity or on an ulcerated surface and their effect resembles that of the acid when diluted in a similar proportion of water. The acid appears to be drawn by capillarity from the microscopic channels of the diatoms forming the kieselguhr.

Butyric acid belongs to the fatty acid series. It is a clear colourless fluid, with a boiling point of 163° C. It has a pungent, penetrating odour. It is miscible with water in any proportion. Mixed with a solution of serum albumin of human origin it gives a pearly white precipitate, while a similar solution of bovine albumin gives a definitely yellow precipitate. Acid albumin thus formed is active when applied to a cancerous ulcer.

CANCER OF THE UTERUS

Method of using in carcinoma of cervix.—The cervix is first curetted to remove as much as possible of the fungating mass; generally this has resulted in the production of a hole in the cervix or in the lower portion of the uterine mass (when the cervix has been destroyed by the disease) without serious danger to the surrounding organs. Care must be taken to avoid damage to the bladder and rectum, for the last vestiges of diseased tissue can be removed more safely by the chemical than by the mechanical agent. The cavity is then packed with gelatin capsules filled with a 50 per cent. mixture of butyric acid and kieselguhr and the vagina is closed by the insertion of a gauze or cotton-wool plug. I have been in the habit of having a small quantity of chalk placed in the upper part of the plug to neutralise any acid in the discharge that may pass down, but this has not been dictated by any evidence of its necessity.

For some time I was over cautious. I was replacing a less powerful with a more powerful agent and used weaker mixtures. But later on I found that 50 per cent. mixture did little or no harm to the normal tissue and was just strong enough to break down the trabeculæ, which were partially involved in the disease, and so opened up the pockets which might otherwise interfere with the complete destruction of the diseased tissues. I have never seen any massive sloughing. The destruction is limited to minute masses; the thin-walled vessels of the malignant tissue are destroyed and the bleeding ceases. It is a constant experience that very soon in the course of treatment the patient is relieved of pain and improves in well-being.

Those cases of cancer of the cervix which were merely cleared up for operation and caused no trouble with pelvic sepsis or recurrence are not described below. Each of those reported shows some point of special interest.

Case 1.—Mrs. A., aged 53, was admitted to hospital in October, 1928, with a history of bleeding for six months—very free for some time during which she had been confined to bed, and had taken freely of alcohol "to pick her up." She was blanched. "Bimanual examination per vaginam reveals a large ragged hole where the cervix should be, and there is a very offensive bloody discharge with masses of clot. Speculum examination in the lithotomy position confirms the digital, and shows the anterior margin of the opening in the vagina turned back like a cuff, and that the hole is slightly to the right side."

Butyric acid treatment.—The curette removed soft masses of tissue and blood clot, and capsules of B/K 40 per cent. were inserted and replaced daily, generally twice. The discharge continued to be very offensive, and four days later there was a profuse hæmorrhage from the cavity, and the patient was more markedly blanched. Stronger capsules were introduced in strips of thin gauze so as to fill the cavity completely, and there was a steady decrease of the offensiveness and blood coloration of the discharge. Four weeks after the curettage no odour could be detected; the turned-back part of the vaginal opening had disappeared, and the opening had contracted. The patient had been sleeping much better, and she had ceased to be restless. This improvement had been gradual since the hæmorrhage, which did not recur. "Careful examination of the interior of the cavity by means of an electric light shows the interior of the cavity smooth and pearly white. No appearance of malignant tissue can be seen."

Operation five weeks after commencement of treatment was undertaken with trepidation, not because of the local but of the general condition. On opening the abdomen the bladder was found to be adherent, and a number of thin-walled cysts occupied the right side of the lower pelvis. These were freed and removed by hand, and the gauze pack from the vagina was found free in the deep part of the cavity so opened up. The uterus (what was left of it) was removed, and some tissue closely adherent to the bladder was left for radon treatment, afterwards, through the vaginal gap. Before closing the abdominal wound a slight bulging of the pelvic peritoneum was noticed. On pricking it with a serum needle nothing could be drawn into the syringe, but on its removal a pearly white bead exuded from the opening, and similar fluid came from the needle. This was found to be non-staining dead tissue (probably butyric acid albumin).

Examination of the *sections* taken at the beginning of treatment showed the tissue from the cavity to be degenerating squamous-celled carcinoma, and that from the edge of the opening was similar, with the cells less degenerate. The examination of the *uterus* after removal showed a solid mass representing the left half of the body of the uterus with a hollow curved surface which formed the lower right boundary of the cavity. The right half of the uterus had entirely disappeared, and the cavity we had cleared had been enclosed by the bladder in front, the rectum behind; the right side and top had the walls of the thin-walled cysts to close them, while mesially the remains of the uterus had been scooped out.

The patient did not regain consciousness, and died on the third day. There was no peritonitis, the operation was of very short duration with almost no handling of organs, and death appears to have been due to her poor condition owing to loss of blood and chronic alcohol poisoning.

Case 2.—Mrs. B., aged 48, was admitted on June 5th, 1928. Weight 6 st. 7 lb. Ill since Christmas, 1927. A projecting mass filled two-thirds of the vagina to distension. Fundus uteri not enlarged. Operability was doubtful because of her general condition. The mass was destroyed by the curette and subsequent butyric acid treatment, but it was never possible to get her fit for operation. The uterus was gradually made thinner by interrupted treatment till the illumination of the bladder caused the cavity of the uterus to be almost equally clear. Ultimately there was a fistula of the bladder and rectum, and she died two years after the onset of symptoms.

Case 3.—Mrs. C., aged —. Admitted Jan. 1st, 1930, with a history of bleeding for six months. The cervix was

found to be moderately rough with free bleeding on digital examination. Section of a piece from the cervix showed the disease to be a squamous-celled carcinoma. The amount of tissue removed by the curette was not large, and with butyric acid treatment the cavity was readily cleared up for Wertheim's operation.

The bladder was not adherent and the operation was not difficult, but two masses of enlarged glands were found and removed from the lateral aspect of the pelvis. The mass on the right side was the size of a walnut, and microscopical examination showed it to be completely infiltrated with carcinoma, only very small pieces of lymphoid tissue being left. That on the left was much smaller, and section showed a few masses of carcinoma cells with a great predominence of lymphoid tissue.

The patient recovered from the operation and enjoyed greatly improved general health. Nine months afterwards, however, she returned with bleeding and a recurrence on the right side of the vaginal scar. Radium was applied with apparent benefit, but symptoms returned, and she died 18 months after the original operation. There was no recurrence on the left side where the smaller mass was found and removed; the disease evidently failed to pass this set of glands. Had radium been inserted at the time of the operation in the right side of the pelvis it would most likely have destroyed the disease which had passed beyond the gland mass, and the treatment of the case would have succeeded. Before operation the presence of infected glands could not have been determined, and the cervical state might have suggested that there was probably no gland infection.

CANCER ELSEWHERE

Rectum.—Where obstruction of the rectum makes colotomy imperative, and the patient has a determined objection to interference with the growth, I have used palliative treatment.

CASE 4.—Mrs. D., aged 66. Colotomy done in April, 1927. A growth with a rough surface projected into the upper rectum and involved the entire lumen. Colotomy was followed by passing of butyrate of quinine down the distal branch from the colotomy opening till they reached the obstruction. This was found to be done most conveniently by choosing a rubber tube of suitable lumen, measuring the distance to the obstruction, fitting a capsule into the end of it, passing it down with the capsule at the forward end, and passing a thin bamboo rod to push it out. After a time the patient became quite expert, and was able to do this twice a day when she attended to her colotomy. At first the capsules contained butyrate of quinine, and it caused the bleeding to stop, and the discharge after a time became less. When we used butyric acid/kieselguhr in the capsules the discharge became freer for a time and later only occurred occasionally.

This patient was able to resume her normal life, and looked and felt well. She had an illness about three years after the colotomy, and treatment ceased for five months. On examination the growth was found to have enlarged, and it bled freely on digital examination. Under anæsthetic the lower rectum was exposed and the mass was injected with butyric acid solution, and the capsules were again inserted. She rapidly recovered her usual condition, and four years after the colotomy she was reported well. Treatment ceased on my giving up out-patient work, and six months later she died. This was four and a half years after the colotomy.

CASE 5.—Mrs. E., aged 72. Colotomy December, 1927. Bleeding for six months. This case resembled that given above, except that her treatment was not interrupted and she enjoyed very good health during the whole time she was under treatment, which also ceased in March, 1931. In March, 1932, she was reported still alive, but had been suffering discomfort for the past six months. That is, the discomfort began six months after the treatment ceased, and four and a quarter years after the colotomy. She was still alive in her seventy-seventh year.

The following case was one of cancer of the *stomach*—extensive, inoperable, and involving the whole wall.

CASE 6.—Mrs. F., aged —, who was admitted in September, 1931, had a gastro-jejunostomy in 1925, and was well till April, 1931. After that gradually became thinner and began to have pain after food. X ray examination on Oct. 1st, 1931, showed "thickening of the stomach wall; some delay, but fairly free passage at the stoma. The pyloric end of the stomach allows only a very small amount of opaque meal to pass." Palpation elicited resistance to pressure over the left side of the epigastrium, with tenderness on gentle pressure mesial to the left costal arch, and some feeling of hardness there. No mass could be isolated by palpation in that region. She was unable to sleep for pain and had difficulty in taking food.

On Oct. 5th she was given tablets containing 40 per cent. butyric acid mixed with kieselguhr 60 per cent. three times a day. The supply lasted a week and gave her relief. There was some delay in getting a new supply, and she was distressed at the delay. It was planned that the tablets should be preceded by a dose of hydrobromic acid, but this was found to give less relief and was discontinued. Then there was marked improvement. She was able to resume a mixed diet, and on Dec. 28th, 1931, her doctor reported that the growth (referring to the resistant hardness in the left epigastrium) was somewhat smaller. "She has no vomiting or obstruction of the bowels. At times she gets distended, but it is possible to empty it by massage. Her general state is somewhat improved, she does not need sedative at present at night."

On Feb. 6th, 1932, her doctor sent me word that she had suddenly become worse, and I went to see her. She was sleeping and looked thinner. Her abdomen was soft, and I could handle a mass about the size of a closed fist to the left of the umbilicus, while the fullness which occupied the epigastrium at first had disappeared, and the region of the costal arch could be readily palpated. On careful re-examination of the X ray plates with the aid of the radiologists I found that the mass occupied the position of the part of the stomach beyond the "stoma." When photographed on Oct. 1st, 1931, this part of the stomach allowed only a thin streak of opaque meal to pass, and apparently this diseased area had not been acted on by the acid and it had continued to grow, while that part which came under the influence of the powder had been thinned down.

Her husband still thought she was getting on all right as she continued to take food freely and had no pain. She died ten days after my visit, probably from secondary disease. No post-mortem examination was allowed, and it was very unfortunate that she could not be radiographed during the later part of her illness.

Lastly, I will describe two cases of papilloma.

CASE 7.—Mrs. G., aged 43, had a tumour of ovary removed by operation, followed by recurrence in the abdominal scar six months later. As this was anticipated she was not sent to hospital, but later a group of cysts appeared in the scar and caused stretching. This worried her and prevented sleep.

Eight months after the primary operation she came in for relief. There were three cysts projecting beyond the level of the skin. They were about the size of small bantam's eggs. One cyst was injected with 1 c.cm. of 20 per cent. watery solution of butyric acid. It caused uncomfortable tension, but when the needle was withdrawn a quantity of clear fluid spurted from the needle-prick and this gave relief. Next day there was slight reduction of the projecting bulk, and the other two were similarly treated on succeeding days. The cysts steadily became smaller, and in less than ten days they ceased to cause tension. The pelvic growth progressed, and when the patient died no evidence of the cysts in the scar could be detected on microscopical examination.

CASE 8.—Mrs. H., aged 58, was admitted on Nov. 2nd, 1929. Her illness had begun 22 months ago when a small lump appeared beside the anus. This was excised twice at intervals of six months, and three months after the second excision a gland was removed from the opposite groin. On Jan. 29th radium was applied with apparently successful results for a time. There was a further operation, and radium was used in June, 1929. In the following August radium was applied externally and the growth increased. It then continued to grow rapidly.

On admission there was a mass of cysts like small purple grapes occupying the fold of the right groin, and passing down the right labium majus. The main mass was ¼ in. in depth, becoming ⅛ in. at the inner end. It measured 2 in. to 2½ in. from above downwards. The skin of the thigh was strewn with large numbers of small vesicles for the 5 in. next the main mass. Those higher up were in groups, some confluent, but lower down they were mostly discrete. Mentally the patient was greatly distressed, and in despair, because she had been unable to sleep or get any remission of the irritation, although all the usual means had been tried. She knew that the treatment was experimental. She was prepared for anything that would probably bring some relief.

Treatment consisted of injecting marked groups of discrete cysts and application of 2 per cent. solution of butyric acid over the affected area. This was found to relieve the irritation, and the patient slept. It was renewed twice in the day and once at night. The small cysts became papery, lost their contents, later shed their covering, and ultimately healed. Those which were injected remained

slightly longer than those which were merely covered by the lotion. The cysts of the main mass also lost their "bloom," but their bulk and the stiffness which they produced in the thigh was not changed materially, and a week after her admission grs. 10 of kieselguhr/butyric acid 40 per cent. powder was put on the surface of the main mass on its middle third. Next morning this part had obviously reduced in depth. On Nov. 14th and 15th similarly the outer and inner thirds were treated, and on the 17th the right labium majus was treated, since this part could not be so effectively treated with the lotion, and it caused special annoyance.

On Nov. 18th the temperature rose to 102° F., and it fluctuated till the 25th. The depth of the main mass was greatly reduced, and the cysts composing it shrivelled, but the top of the vulva was causing annoyance, and some powder was applied there. Her temperature was now fluctuating, and while only the 2 per cent. lotion was being applied a fortnight later she became comatose, dying on Dec. 12th, 1929—forty days after admission and 23 months after the onset of her illness. She appears to have succumbed to the effects of toxic absorption. The quantity of powder applied was much smaller than we were using in treating cancer of the cervix. We were not aware of the risk, and the patient was impatient of delay and perhaps overcame our caution.

COMMENTARY

While I used butyrate of quinine I was able as a rule to get the cervices cleared, but I was conscious of the limitations in its power of destruction. Since I have used butyric acid and kieselguhr mixture, cases of moderate severity have been rapidly prepared for Wertheim's method and the results have been good, without any trouble from pelvic sepsis. The tendency to-day seems to be to hand over these cases for radium treatment, and if the results are favourable this is likely to persist. There is, however, one class of case, not so numerous as formerly, where the pelvic glands are involved in the disease and where Wertheim's excision gives the patient a very good chance of cure, provided the disease has not spread beyond the first set of enlarged glands. If the disease has spread further than the gland masses which can be found and removed by operation the application of radium to the cavity left by the removal of the glands is likely to add considerably to the security from recurrence. Even if this method fails to cure it is very likely to give greater relief.

A serious risk is run in treating carcinoma of cervix by radium from the first, because it is difficult and often impossible to be certain that the pelvic glands are not involved in the disease, and while the cervical disease is limited in its apparent extent the glands may yet be considerably and even severely involved.

Case 3 illustrates this. The mass on the right side of the pelvis would have escaped destruction. Its removal did not take away the disease which had extended beyond the cancer-filled glands, but this might have been still within the influence of radium inserted in its neighbourhood at the time of the operation or immediately afterwards. In Case 1 the application of radium following a cleaning-up of the cavity would most likely have been successful in saving the patient. It would have avoided the shock of operation, and the cavity was sufficiently large to accommodate even the doses used to-day. Case 2, again, was one which could have been easily dealt with by radium after the first month's treatment.

As regards cancer of the intestine and stomach it appears that the healthy mucous membrane suffers nearly as much as the cancerous tissue from a dose of radium which is lethal to the disease. That means that there is not a sufficient margin of safety. Butyric acid on the contrary has marked selectivity, and its action has been comforting to the patient. Prof. M. J. Stewart of Leeds has stated in his Croonian lecture that "primary carcinoma, even when it has infiltrated the whole thickness of the stomach wall, tends to conservation of the muscular coat, in many cases of the muscularis mucosæ as well."[1] This gives assurance that destruction of the diseased mucous membrane with butyric acid carries very little risk of perforation, since the action of the powder never produces a slough.

In the two cases of cancer of the rectum recorded above the disease was situated at the top of the rectum. They could have been attacked also, apart from excision, by infiltrating the tumour and its neighbourhood with the aqueous mixture of acid. This is easier when the growth is low down. When this was used in Case 4 it caused only temporary disturbance and no hard scars resulted.

Papilloma is very sensitive to the action of butyric acid, and when it is situated on the surface the remedy can easily be applied.

SUMMARY

Butyric acid has a destructive action on cancer of many parts of the body, while it has a much less injurious effect on normal tissues—i.e., it is *markedly selective*. It is useful in cleaning up fungating malignant ulcers and rendering them suitable for treatment by surgery or radium. It can be made to destroy and delay the spread of growths in inoperable cancer of the rectum and stomach, and it destroys superficial papillomata.

Further work is required to exploit the possible uses of butyric acid in other regions of the body, and attempts are being made to place it in the lymphatic spaces around the advancing surface of the mass in sufficient amount to prevent further growth. Hitherto the attack has been made from the rear; now it is hoped to repel the advance.

Clinical and Laboratory Notes

SODIUM MORRHUATE

VARIATION IN COMMERCIAL SAMPLES

BY R. T. M. HAINES, M.A. CAMB.

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SINCE its introduction, some four years ago, as a sclerosing solution in the treatment of varicose veins, sodium morrhuate has attained a considerable measure of popularity with the medical profession as an easily handled, safe, and fairly certain drug. The mechanism of its action, however, is somewhat obscure and no criteria have been laid down as to what constitutes "sodium morrhuate." It was therefore thought to be of interest to examine some commercial samples with a view to ascertaining the degree of uniformity attained by different manufacturers.

The 10 per cent. solution was selected for examination, and a rubber capped bottle of from 20–30 c.cm. capacity of five different makes was obtained from ordinary trade sources. Ocular examination disclosed considerable differences between the various solutions, some of which were clear at the laboratory

[1] THE LANCET, 1931, ii., 618.

temperature, whilst others were turbid, gelatinous, or contained a crystalline sediment. Other things being equal, it is obvious that products of the first class possess a distinct advantage, since they do not require heating to effect solution before use. Analysis showed these differences to be so great as to make the description "sodium morrhuate 10 per cent." almost meaningless.

The samples were examined for appearance, colour (Lovibond tintometer, 1 cm. cell), content of fatty acid, and iodine value of fatty acid. This last figure is the most important, since there is reason to believe that sodium oleate is both more toxic and less active as a sclerosing agent than are the sodium salts of the more highly unsaturated fatty acids. The iodine value of course rises as the elimination of oleic acid from the unsaturated fraction becomes more complete. A correction had to be applied to the apparent iodine value (I.V.) found directly on the freed fatty acid, due to the presence in all the solutions of preservatives of the phenol type. The I.V. was determined by Dam's method and under the conditions of the experiment pure phenol was found to have an iodine value of 565. Tricresol gave an almost identical figure. In order to determine the correction to be applied, the freed fatty acid was in each case analysed for its content of preservative. The results are given in the accompanying Table.

Iodine Value.—It will be seen that there is a remarkable discrepancy in the series. In sample C only has there apparently been made an attempt (in this case almost completely successful) to free the drug of sodium oleate. The remaining four samples fall into two classes B and D partly purified, and A and E giving solid fatty acids with all the original oleic acid from the cod-liver oil still present.

Colour.—Here again there is a great variation, amounting to some 500 per cent. between the lightest and darkest sample. Three samples are yellow (A, B, and D) and two orange. Two samples only (B and C) are "bright" solutions as shown by the absence of general absorption.

Concentration.—All samples were labelled "10 per cent." but only two (A and C) really conform to the stated concentration. One (D) is excessively weak, while two (B and E) are intermediate in strength, but distinctly low.

Conclusion.—Enough has been done to show that the term "sodium morrhuate 10 per cent." is very differently interpreted by different makers and that some standards should be laid down and conformed to.

My thanks are due to Mr. H. E. F. Notton, B.Sc., of British Colloids, Ltd., for doing the phenol analyses.

CIRCUMFERENTIAL WIRING IN FRACTURES OF THE MANDIBLE

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Fractures of the mandible in edentulous patients may or may not be associated with an amount of deformity demanding reduction and thereafter retention until union has occurred in the corrected position. It is conceded that anatomical alignment need not be insisted upon but displacement that will result in functional disability should not be tolerated unless

FIG. 1.—Condition before reduction.

attendant circumstances, such as age, the condition of the patient, and associated injuries, render active intervention inadvisable.

The indications being granted, choice of method will have to be made. This note is written to urge the claims of splint fixation by circumferential wires after complete reduction surgically effected from inside the mouth should manipulation prove unsuccessful. In cases where a lower denture is in use, the necessary splint can be made to a cast taken therefrom. The splint is preferably made of metal and lined with soft rubber. The wires are of virgin silver and are introduced by means of a wire-carrier through a small skin incision at the level of the lower border of the jaw; they are made to hug the bone closely and are twisted over the splint inside the mouth. The twisted ends are bent down and are covered with small pieces of rubber tubing as a protection for the tongue. The

TABLE SHOWING RESULTS OF EXAMINATION OF SAMPLES OF SODIUM MORRHUATE

Sample.	Appearance.	Colour.				Fatty acid content.	I.V. found.	Preservative in fatty acid after isolation.		I.V. corrected.
		Y.	R.	General absorpt.	Total colour.					
						Per cent.			Per cent.	
A ..	Semi-solid curdy yellow.	11·8	2·2	5·4	19·4	9·45	178·5	Phenol	3·4	159·3
B ..	Liquid, clear yellow.	18·0	2·2	0	20·2	9·03	183·9	,,	3·5	164·1
C ..	Liquid, clear orange.	16·0	2·4	0·6	19·0	9·74	241·2	Tricresol	2·6	226·5
D ..	Liquid, turbid yellow.	9·2	0·4	4·8	14·4	7·0	193·5	Phenol	4·9	165·8
E ..	Gelled, turbid orange.	59·6	15·6	13·2	88·4	8·15	169·5	,,	3·8	148·0

Fatty acid from B and E was solid at ordinary temperatures, A and D partly so, C liquid. Y. = yellow; R. = red.

method was frequently used in difficult cases during the late war by my colleague Mr. C. H. Bubb, and its use was described and recommended by him in a paper entitled Some Technical Details in the Treatment of Jaw Injuries.[1]

The application to a case in civil practice is described and illustrated herewith. The patient, a man aged 52, was admitted to Queen Mary's Hospital, Stratford, on July 22nd, 1931. On the 9th his jaw had been fractured by a blow from a fist received during a scuffle. The condition shortly after the injury is shown in Fig. 1. He was, as indicated, edentulous. His lower plate was used by Mr. Hector Cowles, senior dental surgeon, and served for the construction of a metal splint lined with soft rubber. On July 23rd under intratracheal anæsthesia, induced by Dr. Niel McDonald, the fracture, resistant to ordinary manipulation, was reduced by free mobilisation of the fragments from inside the mouth. The splint was then adjusted and fixed as illustrated in Fig. 2. Progress was uninterrupted and on August 14th the wires were cut and the splint removed; he was discharged the following day. The alignment shown in Fig. 2 was maintained and firm bony union occurred. When the patient was seen two months later his old denture was in commission unaltered, and although not a very accurate fit it was sufficiently serviceable to content him.

FIG. 2.—Reduction effected and splint applied.

Circumferential wiring has been resorted to in the case of an ununited fracture in a child aged 4 years under the care of Mr. Bramley Ball and myself.[2] Union was brought about by means of an osteoperiosteal graft and perfect occlusion was obtained. The method has been proved to be of unquestionable value in selected cases and should occupy an established place in procedure.

AGRANULOCYTOSIS

By Duncan Leys, M.D. Oxf.
PHYSICIAN, SELLY OAK HOSPITAL, BIRMINGHAM

It appears that few cases of agranulocytosis have been recorded in Great Britain, and I therefore report one which came under my care in March, 1932. Its course agrees in essentials with others reported, but a primary syphilitic chancre was present.

The patient was a married woman of 33. Her illness began early in March, 1932, with sore mouth, malaise, and fever; she arrived in hospital at the end of March and then had a severe stomatitis, with pale, swollen, and retracted gums, and much dental caries; complexion and conjunctivæ were pale, and spleen moderately enlarged. Neither liver nor lymph glands were enlarged; the urine contained a little protein. For some years she had been treated intermittently for "bronchitis"; there was some mucopurulent sputum containing a multiplicity of organisms but no tubercle bacilli, and she had signs suggestive of some fibrosis at the right pulmonary base; there was no hæmoptysis or bleeding from any other part of the body. A few weeks after admission to hospital she drew attention to an indurated ulcer on the right labium, and a serum Wassermann reaction was then found to be strongly positive. The maximum number of granulocytes found was 104 per c.mm. and on one occasion the granulocyte count fell to eight cells only. The full figures were as follows:—

—	March		April			May
	23	31	6	12	28	4
Erythrocytes (millions per c.mm.)	—	2·16	2·00	1·84	1·56	1·44
Hæmoglobin (per cent.)	—	45	42	45	30	32
Colour-index	—	1·0	1·0	1·2	0·9	1·0
Leucocytes (per c.mm.)	400	800	700	900	800	900
Granulocytes (per cent.)	10	1	8	10	13	5
Lymphocytes (per cent.)	80	98	90	88	83	94
Hyalines (per cent.)	8	1	1	1	4	1
Lymphoblasts (per cent.)	2	0	0	0	0	0
Metamyelocytes (per cent.)	0	0	1	1	0	0

Other examinations were made from time to time as follows:—

March 31st	Fractional test-meal	Gunzberg test for free HCl negative throughout.
April 6th	Culture from mouth	Mixed infection; no Vincent's organisms, and no *B. pyocyaneus*.
„ 12th	Blood-urea	20 mg. per 100 c.cm.
„ 15th	Blood culture	Sterile.
„ 16th	Culture from apex of extracted tooth	Streptococci.
„ 18th	Fragility of red cells	Normal figures.
	Reticulocytes	3·6 per cent.
	Blood platelets	103,000 per c.mm.
„ 19th	Agglutination of serum v. typhoid group	Negative.
May 4th	van den Bergh reaction	Direct and indirect negative.

The causation of agranulocytosis being unknown, no specific treatment is possible; this patient was given a light diet with accessory food factors A and D as Radiostoleum (British Drug Houses) dr. 1, C as orange juice 3 oz., vitamin B as Marmite dr. 4 daily. One ounce of liver extract and excess iron as pill ferri grs. 45 daily was also given. The worst teeth were extracted with nitrous oxide anæsthesia early in April; there was no excessive bleeding. A course of intravenous novarsenobillon was begun in April, and four injections given at weekly intervals. The patient then demanded her discharge, but was taken acutely ill on the night of her arrival home, with rigors and severe headache and backache, and returned to hospital within the week, but died the following day. Slight pyrexia was present for a few days after her first admission to hospital, and her temperature range about 104° F. during the last 24 hours, but for the rest the course of the illness was apyrexial.

The autopsy findings were as follows:—

Lungs: Areas of collapse in both lower lobes.
Heart: Pale brown œdematous myocardium with some atheroma of aorta.

[1] British Dental Jour., 1916, xxxvii., War Suppl., 370.
[2] Practitioner, 1930, cxxiv., 429; Trans. Med. Soc. Lond., 1932, lvi., 32.

Lymph glands: Enlarged in the neck up to 2×1×1 cm. microscopy showed myeloid infiltration and great proliferation of reticulum cells.

Liver: Enlarged and œdematous. No free iron. Scattered creamy white subcapsular nodules with hæmorrhagic borders, up to 0·8 cm. diameter. Microscopy: fatty degeneration and pyæmic abscesses.

Spleen: 20×14×10 cm. with firm cut surface, prominent trabeculæ and Malpighian corpuscles.

Kidneys: Numerous pyæmic abscesses with broadening of cortex. Microscopy: myeloid infiltration and parenchymatous degeneration.

Bone-marrow: Red in upper quarter of shaft of right femur, red in ribs. Microscopy: Cellular hyperplasia; increase of reticulum cells.

Cultures from kidney, liver, and bone-marrow all gave streptococci.

The extreme reduction in the number of circulating polymorph cells does not alone suffice to place this case in the agranulocytic group. There is, in fact, no sharp distinction to be drawn in a number of cases between aplastic anæmia and agranulocytosis. F. G. Lescher and D. Hubble, in a recent paper [1] which includes a good bibliography, suggest that there is some common factor which may affect the blood-forming organs to produce in one case the picture of aplastic anæmia, in another agranulocytosis, and in others a hypoplasia of all the blood elements. The nature of this factor is completely obscure, but it is safe to say, relying on the reported occurrence of cases in which blood changes were observed before the appearance of the sepsis common to all cases, that infection by pyogenic organisms is the result and not the cause of the blood-cell hypoplasia. In fatal cases (the great majority) hyperplasia of the reticulo-endothelial system appears to be a constant phenomenon.

The blood examinations and autopsy were carried out by Dr. Sybil Robinson, pathologist to Selly Oak Hospital.

[1] Quart. Jour. Med., 1932, n.s. i., 425.

MEDICAL SOCIETIES

EDINBURGH OBSTETRICAL SOCIETY

A MEETING of this society was held on March 8th, with Dr. JAMES YOUNG, the president, in the chair.

Œstrin for Secondary Amenorrhœa

Dr. W. F. T. HAULTAIN read a paper on the clinical use of a preparation of œstrin in the treatment of functional secondary amenorrhœa, which was illustrated by the case-records of 16 patients. The preparation used was progynon and the cases on which treatment was exhibited were all cases of secondary amenorrhœa in which no definite cause, either general or pelvic, could be found to account for the onset of the condition. The majority of these women were nulliparous and when married were usually sterile, though in one of his cases a pregnancy had resulted after treatment. Of the cases whose history was given, 11 were cured, the ordinary menstrual habit returned after discontinuance of the treatment; 3 were difficult to assess accurately as though bleeding had occurred, the menstrual habit had not been regained on discontinuance of the treatment; in 2 cases no effect had been produced. Dr. Haultain said that latterly he had been giving doses of 1000–10,000 M.U. of progynon ester to patients who had not responded to the ordinary dosage orally or by injection, and that in two such cases already he had got a satisfactory result. It was just possible that the two failures might react to the ester as it had not been tried in their cases as yet.

Pruritus Vulvæ

Dr. CLIFFORD KENNEDY read a paper on clinical records of pruritus vulvæ treated by A.B.A.[1] injections. He discussed the ætiology of pruritus vulvæ and the more popular methods of treatment at present employed. He described the composition, mode of action, and manner of injection of A.B.A. in detail. In a series of 15 cases the following points were inquired into: (1) age, (2) parity, (3) duration of irritation before treatment by A.B.A., (4) coincident symptoms, (5) number of injections given, (6) when last injected, (7) state of general health, and (8) result of treatment. The general health was improved in 10 of the 15 cases treated. Cure, by which he meant absolute freedom from irritation, resulted in five cases; five were classed as very much improved, which meant recurrence of slight irritation at long intervals; four were slightly improved, a less severe itching occurring with definite intervals of freedom; and in one there was no improvement.

There was no alteration in the local appearance in 12; in two there was a slight thickening of the skin; while in one there was leucoplakia. Urine analysis showed an absence of sugar in all cases. His general conclusions were as follows: (1) Pruritus vulvæ may occur independently of any accompanying condition, either general or local, and must therefore be viewed, in many cases, not as a symptom but as a disease. (2) There would seem to be close relationship between pruritus and the menopause. (3) Endocrine deficiency might be a possible ætiological factor. (4) The quicker the response to treatment the better the ultimate prognosis. (5) The high proportion of cure resulting from A.B.A. injection indicated this method as one worthy of trial.

[1] A.B.A. is anæsthesin 3 parts, benzyl alcohol 5 parts, and ether 10 parts, in sterile olive oil up to 100 parts.

Bilateral Cortical Necrosis of the Kidney

Dr. R. J. KELLAR and Dr. W. M. ARNOT recorded three cases of bilateral cortical necrosis of the kidneys during pregnancy. They discussed the biochemical findings in these cases, and the theories on its causation and treatment.

The first case was one occurring in a woman aged 26, 1-para five months pregnant. She was admitted with a history of severe hyperemesis since the second month of pregnancy, and of anuria of a fortnight's duration. Examination on admission revealed slight œdema of the lower limbs, no raised blood pressure, and no urine in the bladder. Administration of abundant fluids failed to stimulate urinary secretion. Abdominal hysterotomy was performed, the fœtus and placenta being apparently healthy. Patient survived for 16 days after operation. For the first week she appeared to be making progress although the blood-urea, creatinine, and phosphorus were mounting and the alkali reserve dropping. During this period there was secretion of a very small quantity of urine. During the second week peritonitis and broncho-pneumonia supervened; urinary secretion, however, increased so that on the day prior to death 16 oz. were passed. During the last three days the blood-urea and creatinine showed some diminution. At post-mortem the kidneys showed numerous scattered areas of cortical necrosis. Microscopically these areas showed hyaline necrosis with well-established calcification with no congestion. Remaining cortical tissue was infiltrated with pyelonephritis.

The second case was that of a woman aged 30, 2-para, who was admitted with a history of vaginal bleeding of a few hours' duration. The blood pressure was 185/135. Shortly after admission there occurred a series of eclamptic fits. Patient died undelivered during the fifteenth fit. At post-mortem it was found that the whole cortex of both kidneys was red, swollen, and congested. Microscopical examination

indicated the necrotic cortex to be identical with the initial red stage of infarction. Subcapsular hæmorrhages were present in the liver, but no areas of focal necrosis were seen.

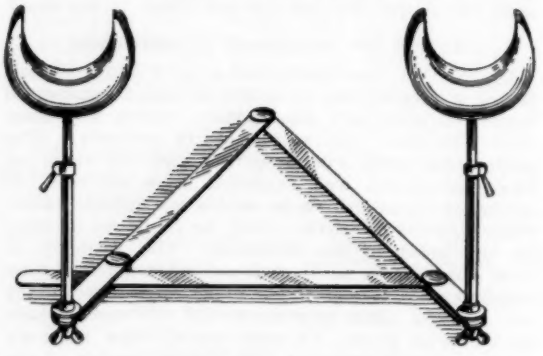
The third case was that of a woman aged 29, 2-para, in the sixth month of pregnancy. She was admitted with the features of a severe toxæmia, gross œdema, impaired vision, epigastric pain, and raised blood pressure. During the night of admission there was severe abdominal pain and vaginal bleeding. Accidental hæmorrhage was suspected and the following day an abdominal hysterotomy was performed. The uterus was typical of concealed accidental hæmorrhage. Patient survived for a week after operation and during this time only 4 oz. of urine were secreted, in spite of the administration of abundant fluids. On the seventh day after the hysterotomy decapsulation of the left kidney was carried out, the subcapsular appearances being suggestive of cortical necrosis. It was noted that the capsule did not exert any pressure on the renal parenchyma. Patient died ten hours after operation. Post-mortem confirmed the diagnosis of widespread cortical necrosis. Microscopically these areas showed hyaline necrosis with commencing calcification, there being pronounced congestion in the boundary zone of each necrotic area.

It was pointed out that most cases of this condition were associated with pregnancy, others being noted in conjunction with scarlet fever, diphtheria, and dysentery. Ten cases had previously been reported to the society. A review of the literature showed that this peculiar complication of pregnancy usually supervened during the fifth to the seventh month. It showed no special predilection for the primipara. Usually there were toxæmic symptoms present, such as vomiting, headaches, œdema, dimness of vision. Some cases had been associated with eclampsia or accidental hæmorrhage. Anuria or extreme oliguria was the rule. A fatal outcome was common, the closing stages being marked by extreme nitrogen retention, exhaustion, and, possibly, superadded infection. The pathology of the condition was well exemplified by the three cases recorded. The second case showed the early stages of multiple infarcts —i.e., extreme congestion and thrombosis of the vessels in areas of commencing necrosis. The third case was one in which the process had not been so extensive, the necrotic areas showing advanced hyaline necrosis, thrombosis of the intralobular and afferent glomerular vessels, and peripheral congestion with commencing calcification. The first case showed a still later stage, necrosis in the infarcted areas being complete with well-established calcification and absence of congestion. A large amount of intravascular fat was present in the first and the third cases. The first case showed progressive increase in urinary secretion with some diminution in the degree of the nitrogen retention. Microscopically, healing of the infarcted areas was in progress, and it seemed reasonable to assume that the remaining cortical tissue might have undergone complete recovery but for the superadded infection. Cases of recovery had been recorded following decapsulation of the kidneys, the diagnosis not being in doubt as pieces of the kidney for histological examination had been removed at the operation. The condition seemed to be due to an interference with the blood-supply to multiple areas of the renal cortex. There was no indication that this was due to emboli, the presence of the intravascular fat globules being explicable on the basis of a toxic lipæmia. Thrombosis appeared to be the cause of the infarction. The actual cause of the thrombosis was not understood although it was known that the eclamptic toxin had a selective destructive effect on vascular endothelium. The unknown toxic agent which caused the thrombosis would also have a deleterious effect on the rest of the renal substance. Recovery must depend on (1) the extent of the infarction, (2) the speed of recovery of the remaining cortical tissue, and (3) the avoidance of superadded infection. In cases where the whole of the renal cortex was involved death was certain. In considering treatment decapsulation had been advised but this operation was so severe and the stage of congestion and increased tension so short that it was difficult to see why this procedure should be efficacious. Abundant fluid should be administered and the skin stimulated. After some days, when recovery was in progress, diuretics might be administered.

NEW INVENTIONS

PORTABLE LITHOTOMY SUPPORT

Miss Alix Crichton, Edinburgh, has invented a lithotomy support of a new design which has certain outstanding advantages, comprising comfort to the patient, stability in the required position, and ease of access to the operator. Further, when not in use it folds into small compass and is easily carried. Essentially the support consists of two parts: (1) a folding triangular base which in use lies under the patient's back, being pushed below the mattress of a bed or laid under a folded blanket on a table; (2) leg-rests which fit into sockets in the projecting



sides of the triangle, and are easily and quickly secured. These can be adjusted vertically and horizontally, to suit individual cases. The retaining factor for the appliance is provided by the weight of the patient, the triangle being so designed as to allow its apex to reach the level of the seventh cervical spine while its sides receive the pressure of the shoulder-blades. The support is so stable that it does not move even under the strain of a difficult forceps delivery. No helper is required to maintain the position of the patient. This is a great advantage where work has to be done in cottage homes without trained assistance. Excellent access is obtained for such operations as repair of perineal laceration, breech delivery, or intra-uterine manipulation.

Messrs. Allnatt and Partners, Walmer House, Regent-street, W., are the makers.

SHEILA MACPHERSON, M.B., Ch.B.

BIRMINGHAM SKIN HOSPITAL.—Last year the out-patient attendances numbered 80,685, to which they have risen progressively from 68,000 in 1928. For several years past the hospital has been struggling against pressure upon inadequate space, and it is now proposed to transfer the in-patient department to another building capable of providing 50 beds, including from four to six for paying patients. The out-patient department and the administrative staff would remain in the existing premises.

REVIEWS AND NOTICES OF BOOKS

Operative Surgery

By ALEXANDER MILES, M.D., LL.D., F.R.C.S., Casualty Surgeon to the Royal Infirmary, Edinburgh; and D. P. D. WILKIE, M.D., F.R.C.S., Professor of Surgery, University of Edinburgh. London: Humphrey Milford, Oxford University Press. 1933. Pp. 590. 21*s*.

Thompson and Miles's "Surgery" has greatly changed in character under the editorship of Miles and Wilkie. It is significant of the complexity of modern surgery that it has been thought advisable to enlist the help of sixteen collaborators in this, the third volume of this work, which deals with operative procedure. A composite book is apt to suffer from overlapping and varying standards of achievement; this volume, however, seems to have escaped all the disadvantages of the system whilst retaining its good points. The contributions have been welded together and there is a pleasing uniformity of presentation, style, and expression.

The book is intended for undergraduates, candidates for higher surgical diplomas, and young qualified men who may be called upon to undertake operative work. It promises to fulfil its purpose well; the instructions given are clear, conform to generally accepted practice, and are completed by the numerous and excellent illustrations. A few minor adjustments would be welcome in subsequent editions. In the description of the Polya type of gastrectomy an uninformed student could not tell from the context whether the oral or aboral end of the jejunum should be attached to the greater curvature of the stomach. This may not be of much moment, but the anastomosis certainly seems to lie better with the distal end at the lesser curvature. It is inadvisable in a book for students to describe von Eiselsberg's pyloric exclusion operation, which has been rightly condemned because it is so often followed by a gastro-jejunal ulcer. Marwedel's and Grey Turner's aids to exposure of the cardiac end of the stomach are, we see, given due recognition.

In the resection of the colon associated with the names of Paul and Mikulicz, it would be helpful if the technique for closure of the opening in the completion of the operation were described. Incidentally, since Paul anticipated Mikulicz by several years, the latter name might be eliminated, or at any rate placed second. A simple method of aseptic colic resection finds a place, and the interesting observation is made that closure of the crural canal in the radical cure of a femoral hernia is useless.

In the account of litholapaxy the authors do not mention that cystoscopy is an essential precaution to ascertain that all fragments have been evacuated if success is to be ensured. The section on urinary surgery is for the most part exceedingly good, though in the operation for perineal removal of the prostate we should have liked to see the recommendation to leave the membranous urethra intact, and to introduce the tractor behind this vulnerable region. The risk run of injury to the uterine artery in exposure of the lowest part of the ureter is mentioned, but not the fact that this structure must sometimes be deliberately divided between ligatures to gain access, or that the vas on occasion needs similar division.

Removal of the stellate ganglion by the anterior route is being abandoned because the second dorsal ganglion cannot be reached from the neck. It would therefore be useful to include a description of the posterior operation. Many more successful cases of lobectomy have been done than that of removal of a pulmonary embolus, yet Trendelenburg's operation finds a place whilst the other does not.

The authors might have omitted any mention of the obliteration of bone cavities persisting after osteomyelitis with bone chips or wax, and the example given of the filling of such a cavity in the upper end of the tibia with a piece of the gastrocnemius is not a happy one. This procedure causes permanent muscular weakness of the leg, whereas the sartorius may be turned down for this purpose and its loss will be scarcely noticed.

The book certainly fulfils the purpose of the authors, and will add prestige to the great surgical centre whence it emanates.

The Common Causes of Chronic Indigestion

By THOMAS C. HUNT, B.A., D.M. Oxf., M.R.C.P. Lond., Physician to Out-patients, and Junior Medical Tutor, St. Mary's Hospital, London; Assistant Physician, Queen Charlotte's Hospital; late Radcliffe Travelling Fellow, Oxford University. London: Baillière, Tindall and Cox. 1933. Pp. 341. 12*s*. 6*d*.

THIS lucidly written monograph, intended for students and practitioners, bears evidence of wide reading, patient clinical research, and extensive hospital experience. The clinical aspects of chronic peptic ulceration are well summarised, and the cause of pain in this condition is discussed intelligently. The statement, however, that "the ulcer itself, when examined at operation, does not appear to be tender" requires elucidation, since presumably at operation the patient is anæsthetised. Much importance is attached to the occult blood test in the diagnosis of gastric and duodenal lesions, but Dr. Hunt would doubtless be the first to appreciate the difficulty of excluding other sources of hæmorrhage in the alimentary tract in the absence of hospital or nursing-home conditions. In discussing the treatment of chronic peptic ulceration, he somewhat betrays a medical bias. Treatment by duodenal feeding can only have a very limited practical use, and this also applies to the more elaborate dietetic procedures; whereas weekly X ray examinations during treatment would be regarded as a counsel of perfection by most practitioners. Ambulant treatment of chronic peptic ulceration Dr. Hunt regards as merely palliative, and though this is often all that the patient will submit to, the experience of most physicians coincides with the view that rest is hardly less important than diet. In dealing with the indications for surgery in chronic peptic ulceration no mention is made of the important economic one, constantly arising in general practice, of the wage-earner whose life cannot be made tolerable by a palliative régime, and yet who cannot spare the time or money for a prolonged course of medical treatment, possibly ending in failure. The subject of chronic gastritis is well presented, and attention is called to the tonic value of insulin in this condition. The old diagnostic "snag" of digestive disturbance masking latent phthisis is rightly stressed, and a valuable hint in the early diagnosis of gastric carcinoma is the use of abdominal palpation with the patient in the upright posture. More practical details of the palliative treatment of inoperable gastric carcinoma would have been helpful. Some will disagree with Dr.

Hunt's teaching on the expectant treatment of hæmatemesis, and more will have doubts as to the efficacy of intravenous calcium chloride in this alarming condition.

Dr. Hunt accepts the modern view that the dangers of so-called constipation may be exaggerated; but one wonders whether he and his authority (S. Wright) are not straining credulity to breaking point in their account of the patient whose bowels remained unmoved for a year without the development of any very serious symptoms. The chapter on nervous indigestion is as helpful as the written word can ever be in the management of these difficult cases. The author's figures on the frequency of the incidence of gall-bladder disease will confirm the impressions of many practitioners, as also will the quotation from Dr. C. H. Miller on its association with myocardial disease. Dr. Hunt emphasises the increasing diagnostic significance of cholecystography and biliary drainage, and is optimistic, perhaps unduly so, about the results of purely medical treatment of cholecystitis when uncomplicated by cholelithiasis. Diseases of the pancreas, except in regard to differential diagnosis, are not discussed. The chapters on achlorhydria, flatulence, chronic appendicitis, diverticulitis, functional disorders of the colon, cardiovascular and senile indigestion are compact, informative, and could hardly have been better, and this is true also of the short chapter on alcohol in digestion. There is a chapter on modern methods of clinical investigation and their technique is clearly described. The note on case-taking and the prescriptions should be of service to students and the newly qualified. There are many excellent radiograms. The bibliography is extensive; the index adequate and accurate. The macabre cover may have been chosen as being in keeping with the mental attitude of sufferers from chronic indigestion.

Reconstruction of the Biliary Tract

By EDMUND HORGAN, M.D., M.S., F.A.C.S. London: Macmillan and Co., Ltd. 1932. Pp. 201. 20*s*.

IN this book are described the many operative procedures which have been devised for repair of injuries to the bile-ducts, or the re-establishment of biliary flow when resection of a part of one of them has been necessary or a stricture has developed. No one surgeon has had a large experience of such cases, so that a compilation of all that has been written on the subject, with a critical discussion, which are here provided, are a welcome contribution to surgical literature. The bibliography is excellent.

The Biological Concept of Man

A Brief Introduction. Second edition. By A. H. MILLER, M.A., M.D., M.R.C.P. Bournemouth Guardian, Ltd. 1932. Pp. 15. 2*s*. 6*d*.

THE author of this brief introduction puts forward the thesis that our inability hitherto to deal with insanity and to understand mental states is due to the fact that we have not accepted the biological view of man as an organism in which brain plus muscle function together. If we understand this unity in reciprocity of brain and muscle tonus, we must realise that what we speak of and think about are just end-products and not causes; that to understand a musical organ we consider not the music but its construction, its pipes, valves, bellows. In brief, Dr. Miller's plea is little more than behaviourism restated in terms of muscle tonus. To the psychologist this thesis is even less acceptable than behaviourism, which at least does regard speech or laryngeal responses as of paramount importance in the understanding of behaviour, or what has hitherto been called conscious behaviour. Dr. Miller believes that if we can only study muscle tonus we shall learn all that there is to know of the causes of mental function and mental disorder. In other words, to use his own analogy, a Bach fugue is best understood in terms of organ pipes rather than in terms of the musical structure of the score. Dr. Miller may have some particularly new view with regard to the equation: mental process = brain plus muscle tonus—but his difficult and somewhat syncopated style of writing does not always make his thesis clear.

Man and Creatures in Uganda

By Sir JOHN BLAND-SUTTON, Bart. London: Hutchinson and Co., Ltd. 1933. Pp. 252. 12*s*. 6*d*.

SOME 20 years ago Sir John Bland-Sutton started from Mombasa, with Mr. Comyns Berkeley as a companion, and reached Lake Victoria, traversing Uganda and returning by the Rift Valley. An account of that journey was published under the title "Man and Beast in Ethiopia," and this book is now out of print. It was based upon experiences on the one hand in the Uganda and the Rift Valley, and on the other in the Sudan, and the earlier portion is now brought to our attention in a popular revision under a new title. The natives, the beasts, and the birds of the Rift Valley and of the country round the head waters of the Nile are subjected to cursory but penetrating description, and we have as a result an amusing picture of the life of the district, "animal, vegetable, and mineral," as the parlour game defines the universe. Sir John is a go-as-you-please author. He notes what he has seen and learned, and records his resulting impressions with no unity of plan save that which is furnished by the geographical framework of the book. He avoids all attempts at fine writing, and feels no call to combine the novelist with the naturalist, as did such men as Samuel Baker, George Kingsley, and Richard Jefferies. But in his impressionistic sketches of the various tribes with which he came into contact he resumes the fauna and flora of the localities with the eye of a trained observer backed by wide scientific knowledge, and imparts his curious desultory wisdom with vividness. The gorge of the Rift Valley evidently fascinated him. The floor of the gorge is a tract of the tableland which has sunk many feet below the level of the surrounding plain, but the subsidence has not affected the area equally. The central portions have sunk most, and abruptness is its chief characteristic, for, writes Sir John, "he who crosses it will find himself traversing a series of terraces, sometimes a mile or more wide, which suddenly terminate with a boundary as vertical as the wall of a fortress." The faces of these scarps indicate the immense force which led to the formation of this trough-like valley; the rock has simply been torn through, and the amazing floor presents extinct and active volcanos, steam-vents, and a chain of lakes. In describing the animal life the author is detailed and humorous, and the denizens of this "uncaged zoo" are introduced to us with many excellent wood engravings. The net result of text and pictures is a charming volume, simple, amusing, and instructive.

THE LANCET

LONDON: SATURDAY, APRIL 8, 1933

LOCAL GOVERNMENT LAW CONSOLIDATION

SOMETHING is at last being done to set in order our tangled laws about local government and public health. Mr. GREENWOOD, when Minister of Health, set up a committee of experts for this purpose. He asked them to say how the existing enactments should be amended in order to secure simplicity, uniformity, and conciseness. The committee has now performed the first half of its herculean task by producing an interim report (Cmd. 4272, 2*s*.) on the law relating to local government and local authorities. It will now go on to tackle the public health enactments which it seems to regard as an easier matter.

Simplicity, uniformity, and conciseness were wanted indeed. Some of the legal variations between one local authority and another are fantastic. Take for instance the disqualification of officers by reason of their interest in a local authority's contracts. Suppose that a borough council and an urban district council separately invite public subscriptions to a loan for the purpose of erecting a hospital under the Public Health Acts. In the case of the borough the town clerk and borough treasurer (being appointed under the Municipal Corporations Act) may subscribe to the loan, but the medical officer of health (being appointed under the Public Health Act) may not. In the case of the urban district council neither the clerk, the treasurer of the council, nor the medical officer of health may subscribe, as they are all appointed under the Public Health Act. These anomalies mostly arise because our local government law is contained in three big codes, the Municipal Corporations Act, the Public Health Act of 1875, and the Local Government Act of 1888, and each of these codes deals with a different set of local authorities in a different way. Doubts too have arisen in the construction of the law. A county council has a statutory obligation to pay half the salary of a medical officer of health but it is not clear that this extends to the salary of his deputy, though such payments are usually made. In respect of tenure of office, also, a dubious position was disclosed in 1929 by the decision in Brown *v.* Dagenham Urban District Council. In its recommendations to remove this difficulty the committee proposes that a local authority shall be able to agree with any future officer whose tenure is during the authority's pleasure that it shall be a term of his appointment that the appointment shall not be terminated by either side without reasonable notice. The report gives a clear statement of the many minor points which require amendment and of the reasons for the suggested change. The committee is often able to fortify itself with the opinion of the Royal Commission on Local Government; its proposals are reasonable, and, in accordance with the directions of the Minister of Health at its inception, it has been careful to avoid matters of controversy.

When consideration of the law is accompanied by amendment, it is usual to produce two Bills, one containing the clean draft of the existing law, the other containing the proposed amendments. For technical reasons this course has proved inadvisable in the present instance. The committee has therefore produced one draft Bill (Cmd. 4273, 4*s*.) containing both consolidation and amendment. It is more than 250 pages long; it repeals the whole of over 50 statutes and parts of nearly 200 others. The members of the committee, over which Lord CHELMSFORD presided, included persons prominent in local government administration, Members of Parliament, experienced departmental lawyers from the Ministry of Health and the Home Office, and the two foremost official draftsmen. Expert critics, indeed, are speaking with almost lyrical admiration of the skilled draftmanship of the Bill. It is a monumental work which deserves the early attention of Parliament. Polemical issues having been studiously avoided, it would be a pity if members delayed the passage of the Bill by propounding too many additional amendments. The committee should be encouraged to proceed forthwith to put in order the public health enactments in which the medical profession has an even greater interest.

BLOOD PRESSURE

THERE are some who would compare the blood pressure with the body temperature, arbitrarily assuming a standard any departure from which is an indication of abnormality. Others find an analogy in the cardiac rate; premising that whilst wide divergences from the average are recognised as exponents of cardiovascular or general diseases, there are constitutional peculiarities which admit a fairly liberal range to the category of normality. It would certainly be convenient if the height of the blood pressure could be exactly or even approximately correlated with physical attributes and pathological states or potentialities. How far this is from being the case requires no elaboration. Even to-day there is no universal acceptance of a so-called normal blood pressure, and still one recognises a persistence of the once popular easily remembered formula for the maximum systolic reading of 100 mm. plus the age in years, a standard which is clearly to be discredited. If some formula of this kind is permitted, a fair approximation for the adult is to add one-fourth of the age to 120 mm. until the age of 60, when 135 mm. may be accepted as the normal to which 1 millimetre should be added for each additional year. More recently a greater importance has been attached to the diastolic pressure as the index of the burden, the constant load, to which the heart is subjected independently of the intermittent fluctuations which arise from a variety of causes and are reflected in the systolic pressure. To this aspect of the subject Wing-Commander H. A. TREADGOLD draws particular attention on another page.

The systolic pressure, he holds, is often misleading; it is influenced by emotion as well as by a variety of other causes, and it has been the practice at the R.A.F. Board in recent years practically to disregard systolic pressure in young candidates for this service provided the diastolic pressure is below 80 mm., or, with reservation, between 80 and 90 mm. If it is above that figure the most exacting investigation, particularly in regard to the renal functions, is demanded. Any unusual height in the systolic pressure in a young person must then be related with a corresponding increase in the diastolic pressure, which is not susceptible to temporary and negligible influences. Whilst clinicians in general will be in whole-hearted acquiescence in Wing-Commander TREADGOLD'S recommendations, it is perhaps not surprising that a more widespread recognition of the importance of the diastolic pressure is wanting. Estimation of the maximum systolic pressure is easy and, relatively speaking, unambiguous, so long as one fundamental precaution is taken, if the auscultatory method is employed. But a comparatively rough-and-ready estimation of diastolic pressure will not suffice, and fallacies are only too often encountered. There is no universal acceptance of the correct procedure, as Wing-Commander TREADGOLD points out; and American figures have been based on the point at which all sound ceases on release of the constriction when the brachial artery is auscultated. More accurate results can be obtained by the selection of the beginning of the fourth phase —i.e., the point at which the clear sound changes to a faint thud prior to cessation of all sound. Notwithstanding the importance of the diastolic pressure, it may be objected that the constant load sustained by the arteries throughout the body is represented by neither of the extremes, but by an average of the values which the arterial pressure must exhibit during the cycle from the systolic to the diastolic level. This, the average "dynamic" pressure, is the constant which French authorities define as "*régime de pression*." In a recent article, Dr. R. J. LAJOIE,[1] of Los Angeles, describes in detail this "new criterion of cardiac efficiency." Since the coronary circulation in common with the circulation in the various organs of the body depends upon the average dynamic pressure, there is, says Dr. LAJOIE, a satisfactory explanation for the absence of symptoms of defective myocardial nutrition in aortic incompetence, despite the low diastolic pressure which is so frequently present. Measurement of the average pressure at rest and after exercise may then be a more exact criterion for the estimation of the cardiac efficiency and of the state of the myocardium and in time we may find ourselves compelled to jettison our orthodox conceptions of blood pressure and abandon all the conclusions therefrom in favour of oscillometric estimations.[2]

But for the present much may be gained by accepting Wing-Commander TREADGOLD'S figures as they stand, and learning what we can from them. His study of over 20,000 cases during the last eight years has enabled him to establish a reliable British standard for healthy young adults, and an important conclusion that has been reached is the absence of any evidence of age influence between 18 and 40, if the subjects are of proportionate height and weight; though abnormal body-build is a pronounced factor and a substantial increase is found in the heavy over-weight class. It is natural that, in respect to the special requirements of candidates for aviation, the factor of hypotension or abnormally low blood pressure should call for special consideration. But what is hypotension? There has been, and probably still is in certain circles, a disposition to assume that a maximum systolic pressure below a certain level—110 mm. has been suggested—carries with it physiological disadvantages which are demonstrated by a generally poor physique, incapacity for exertion, a tendency to faintness, to circulatory defects, and so on. In Wing-Commander TREADGOLD'S experience, hypotension even below a maximum pressure of 100 mm. can and frequently does coexist with a high degree of physical efficiency, an observation which supports the experience of Dr. ADOLPHE ABRAHAMS in his investigations upon track athletes. It would appear that the subjects of hypotension fall into two groups: the athletic, in whom symptoms do not occur, and the asthenic, in whom failure of the vasoconstriction, which normally raises the diastolic pressure to act as a compensatory mechanism on change of posture, leads to a relative anæmia of the medullary centres. It is not the existence of hypotension as such which is responsible for symptoms in the second group, but the frequent though not inevitable accompaniment of an unstable vasomotor mechanism. Apart from the considerations of hypertension and hypotension as absolute criteria, there are, as is well known, several applications of blood-pressure estimations in health and in disease for diagnostic and prognostic purposes. The hypotension associated with Addison's disease is a notable example; the bearing of this symptom on the differential diagnosis of tuberculosis generally is not, however, now so popular as it was a decade ago. There appears to be no sound basis for the attempted localisation of a pulmonary lesion from the observation of a difference in value of the pressures in the two arms, since asymmetrical readings, doubtless arising from anatomical peculiarities, occur in a fair proportion of the healthy population. Read's original formula or one of its modifications as a rapid means of estimating basal metabolism is accepted by the majority of physicians. The late G. A. GIBSON'S law of prognosis in pneumonia based on the relation of the cardiac rate to the maximum pressure is no longer accepted as having any value. In organic disease of the heart, however, a rise or fall in blood pressure may be of importance according to the pre-existing height; the progressive fall of pressure in coronary thrombosis is well known to have diagnostic and prognostic significance. The relatively high systolic and low diastolic pressure in aortic incompetence is familiar, and even the comparative values of the pressure in the arms and legs may on occasion

[1] Canad. Med. Assoc. Jour., March, 1933, p. 276.
[2] See THE LANCET, March 18th, p. 593.

be a diagnostic resource in a suspected valvular lesion.

The publication of Wing-Commander TREADGOLD'S views, founded on such a wide experience, is timely. While, except as regards hypotension, there may be no great diversity of opinion upon the general conclusions that may be drawn from estimations of the blood pressure in relation to ordinary cardiovascular efficiency, the possible value of blood pressure and other physiological records as factors influencing the choice of members of an athletic team or crew is still much disputed. In the *Times* of March 29th, Squadron-Leader P. C. LIVINGSTON, himself an old Cambridge rowing Blue, drew attention to what he regards as a defect in the method of selection of crews for the University boat race; he holds that a more extended use should be made of the methods of physical investigation in common usage, methods which, as he relates, have been standardised by the Royal Air Force Board. His letter has instigated a correspondence, the contributors to which include several medical men. It would not appear that so far any method of estimating exceptional physical efficiency is satisfactory. Mr. FRANK LAW, also a Cambridge rowing Blue, regards such investigations as of little more than academic interest, and Dr. ABRAHAMS deprecates the attempt as a whole, regarding athleticism as a special capacity which is beyond any scheme of measurement within our present armamentarium, and insisting that the cardiovascular factor is only one element in a complicated coördination in which biochemistry probably plays a prominent part. The psychological factor has long been recognised as of considerable importance, and is hard indeed to assess in advance.

BRITISH HEALTH RESORTS

NATIONALISM, as is nowadays very evident, may easily be reduced to a fantasy whereby immature minds escape reality. But genuine patriotism, whether in local or national affairs, need not conflict with other loyalties, and there is every reason for a national outlook on some of the problems of health. A case in point is the development of health resorts, which has been definitely neglected in this country. It would be perfectly possible to organise these resorts so that they became centres of recuperation for many more of those who are in need of them. Satisfactory holidays are a necessary antidote to the stresses and distresses of urban and industrial life; but they are not obtainable by a large majority of our fellow citizens. Satisfactory convalescence, physical and mental, is often also the necessary complement of medical treatment; yet who can say that it is economically available to most of our patients? And where illness or partial breakdown has already occurred, who again believes that the best possible use is now being made of the wide range of physical remedies, including exercise, heat, cold, light, and bathing in its various forms? The individual enterprise of the lodging-house keeper, the hydro, the municipality, or even a group like the Spas Federation, will never meet these complex needs until they are explained and driven home. Better for this purpose than an official body appointed by the Government is an organisation largely representative of *consumers*, both medical and lay, who can see possibilities and insist on their realisation. For this reason the formation of the British Health Resorts Association has long been overdue, and its usefulness is not ended now because the upper classes are able to go abroad again. Indeed its usefulness has scarcely begun.

The issue of the Association's excellent handbook this week marks the end of what we may call the first phase of its work, which has been dominated by the need for publicity. In the circumstances of its foundation it was necessary to explain insistently that British health resorts existed and were capable of holding their own if given support. For this reason statements were issued on the merits of the coastal watering-places and the spas, and conferences were held in various winter resorts to arouse local interest and examine local potentialities. A surprising amount of support was obtained from press and public, and the movement for placing British health resorts on the map proved an immediate success. The next step was to show that not all these resorts were alike from the medical point of view; it was necessary to explain their differences, and here again some useful declarations were made. The handbook reproduces these statements and at the same time surveys the principal features of a large number of British resorts, under such headings as climate, accessibility, and indications. But the real task of the Association is to lay down the lines of further progress and coördinated development. At some of its conferences valuable criticisms have been made and gaps have been demonstrated, and the statement on the spas issued last year hinted delicately at room for improvement. There are, it was stated, types of cases for which at present spas must still be sought abroad. For example, there is no spa with a systematised diuretic treatment, no British health resort specialising in the physical treatment of the heart and circulation, and none which is known for its interest in asthma and catarrhs of the respiratory passages. Special methods of use in these disorders have been installed at some of the health resorts in other countries, and the question arises whether similar development would not be possible and advantageous here. In the discussion at Llandrindod Wells it was agreed that it was unwise and unscientific for any spa to claim a range of all-and-sundry medical indications, and the useful generalisation was made that the seaside places are the general practitioners among health resorts, while the spas are the specialists.

The British Health Resorts Association ought to supply authentic information, and it has begun well by doing so; but now, we believe, it should concentrate on becoming a critical and advisory body rather than a means of publicity. The British spas have gone ahead in many directions, but in visiting some of them one feels that they are still essentially a collection of hotels and boarding-

houses surrounding a medicinal spring. This is not enough. Many patients require a change in their whole manner of living—and at present are apt to seek it at homes in the country where they are nourished solely on oranges or grape juice. Available at one or more spas there should be institutions which have rather the atmosphere of a religious retreat than a hotel, since for many people the discipline of such a life may be a desirable means of physical as well as moral health. But it is possible to have a great *choice* of health resorts in this country as elsewhere, though all perhaps should offer to their visitors change of scene, a new manner of life, beautiful surroundings, recreation, and an atmosphere of encouragement. On the one hand we have those essentially favourable to repose, which makes them suitable for many cases of overstrain, and often for nervous and circulatory disorders. At the other end of the scale are busy places with distractions, entertainments, and pleasurable excitements. These are well suited to the less serious forms of ill-health, to people immersed in business routine, sedentary workers, who seek relief from monotony, anxiety, and cares; they offer no repose, but rather the substitution of one form of nervous activity for another. Everywhere, it is clear, the best results will be obtained when any special treatment or occupation provided is calculated to reinforce the climatic and other characteristic advantages of the place. The health resort, whether inland or coastal, should not try to specialise in everything, and it is the task of the Association to inhibit the tendency towards unintelligent imitation. In England it appears that no national body, however powerful, can prevent the devastating suburbanisation of the countryside; but at least it can point out forcibly to seaside towns that in the long run they will lose everything by providing their visitors with exactly the same surroundings as they have at home. The Association's purpose should be to achieve a unity which will prevent uniformity.

ANNOTATIONS

WATER POLLUTED AND UNPOLLUTED

ONLY about 0·4 per cent. of the water on the globe is fresh. The rainfall of the world has been estimated at 29,347 cubic miles of which only about 6524 cubic miles reaches the rivers, conveying some 2735 million tons of solid matter, representing a cube of about 4600 feet edge, annually to the ocean. These and other interesting geochemical data were given by Mr. J. H. Coste at the last meeting of the British Waterworks Association.[1] He dealt mainly with the non-human side of water-supply. The annual report[2] of the Water Pollution Research Board is concerned with the effects of civilisation and quasi-civilisation on water. It is somewhat remarkable that with about 30,000 cubic miles of relatively pure water reaching the earth from the sky each year so much of it should be polluted by human activities as to make it necessary in this country, with its many rivers, to set up such a board. Perhaps the most important of these researches described is a study of the chemical and biological characters of the waters, tidal and non-tidal, of the river Tees, which was selected in 1929 as a typical not too heavily polluted river. No study of this kind in which the activities of zoologist, botanist, and chemist are combined seems to have been undertaken previously, and we presumably have to thank the growing recognition of the importance of ecology for this attempt to treat the whole problem of pollution. One important fact established is that the mortality among smolts in the Tees is due not to lack of oxygen or to sewage, but to cyanides from coke-oven plant effluents. Methods of rendering these effluents innocuous have been suggested. For the last 20 years the "activated sludge" process of sewage treatment has attracted attention but the mass of knowledge accumulated concerning it is mostly of a purely empirical nature. Except that oxidisable organic matters are removed and/or altered, in some way, very rapidly and, if the process is continued long enough, nitrates are formed, via nitrites, at the expense of the ammonia of the sewage, little is known. The intermediate stages and the active agents are so far undefined. Prof. W. W. C. Topley is investigating the biological changes which occur at different stages of the process. So far the bacterial flora only seems to have been considered, although it is not improbable that the vital processes of protozoa present in the sludge bear a significant part. Again a matter of ecology. So far the principal results obtained seem to be confirmation of the fairly well-known fact that the biochemical oxygen demand of sewage is dependent upon the presence of living agents to enable the ordinary chemical oxygen demand to be satisfied. It has also been shown that the time of reduction of methylene-blue by a sewage-activated sludge mixture is some inverse function of the biochemical oxygen demand. Researches under the direction of Prof. F. G. Donnan on the colloids of sewage seem to indicate that the greater part of the suspensoids of sewage are of a coarse character, that there is a small pseudo-colloid fraction which is nitrogen-free, and a nitrogenous fraction probably in a state of colloidal dispersion. Other researches include useful investigations on the important question of treatment of beet-sugar factories' effluent, on the biological filtration of milk factory effluents, and on the base exchange process of water-softening.

[1] The Fundamental Chemistry of Water-supply: B.W.A. Official Circular. No. 102.

[2] Fifth Annual Report of the Board for the year ended June 30th, 1932. Dept. of Scient. and Indust. Research. 1s.

INTELLECTUAL DISHONESTY

How many of us can honestly state, after reasonable introspection, that we have purged ourselves of intellectual dishonesty? The pursuit of truth is not a full-time occupation in any but the selected few who are prepared to go into the wilderness after declaring their discoveries arrived at by the instrument of reason alone, based on unprejudiced observation; and even they may be self-deceived. The questioning of religion and of social foundations has resulted from the assaults of scientific detachment, it is true, but can it be categorically stated that the scientific advance has itself been pursued without prejudice? The tenacity with which old scientific views and doctrines are held long after further discoveries have exposed their fallacies is illustrative of the fact that here too vested interest as well as habituation is the enemy of intellectual honesty. Mrs. Janet Chance, in a book entitled "Intellectual

Crime,"[1] has trenchantly and zealously exposed the inclined slope to dishonesty down which we scuttle in every branch of human activity and thought. In established religion, in social science, in education, politics, philosophy, and the press, she relentlessly pursues the enemies of scientific detachment with a cry of "Prove all things." Her standpoint is one of agnostic reservation before accepting any opinion, and she will have nothing to do with beliefs based on insufficient grounds in reasoned experience, although she accepts the worth *to the individual* of emotionally charged values.

Much scientific opinion has been infiltrated by pragmatism, and it is essential to distinguish this standpoint from the acceptance of working hypotheses with the aid of which much scientific progress has been obtained. The premiss that a belief "works" may become the mother of many a faulty syllogism. Such logical conclusions are held with a tenacity which belongs to individual religious faith rather than to coherent scientific reasoning. To what extent can medical thought be considered guilty of intellectual crime? History, unfortunately, affords examples of such inability to face new and scientifically established hypotheses. The opposition in and out of the profession to chloroform, to Pasteur's germ theory, to the new dynamic psychology are examples in point. In each case established doctrines and prejudices have coloured, if they have not entirely determined, the nature of the opposition. Mrs. Chance's book is timely at an epoch when despair, born of uncertainty, has done much to establish a new dogmatism pragmatic in its basis. While she somewhat overstates her case for intellectual integrity, in failing to realise the emotional bonds that bind us all to old ways, she deserves credit in guarding us against the pit in which we too readily fall, and in warning us against the Jesting Pilates who, immersed in practical affairs, do not wait for an answer.

SUBNORMAL BLIND CHILDREN

ACCORDING to the National Institute for the Blind, the number of blind children in this country under 5 years of age has fallen by nearly 16 per cent. in the past two years. About one-quarter of the children submitted for examination are found by the institute to be not only blind but mentally retarded, and for such cases special accommodation and treatment has to be provided. It has just been found possible to reserve for them all the beds at the Sunshine Home at Leamington, and local authorities throughout the country have been notified to that effect. The exact grading of blind babies on a correct scale of mentality is no easy matter, and the younger they are the more difficult it is. Owing to their blindness these children are deprived of their chief avenue of education, and when they first come under the notice of the institute they may appear to possess a much lower standard of mentality than is actually the case. It is easy to label a baby as mentally defective when really it is only uneducated, and many of the babies admitted to the institute's homes develop under the methods of education employed at an astonishing rate. On the other hand a certain proportion fail to respond and while, according to ordinary standards, they would be classed as mentally defective, yet ultimately they may turn out to be reasonably intelligent. It is for this particular class of blind baby, of inferior intelligence and yet not definitely mentally defective, that the new arrangements at Leamington are intended to provide. The education of these children requires special skill and special methods; they are often very troublesome and become disturbing factors among other blind infants who are of normal mentality. No attempt will be made to define what degree of mental infirmity in these blind babies constitutes actual mental deficiency. The aim will be to help blind babies of inferior intelligence to become sufficiently well trained and educated to be able to look after themselves with a reasonable amount of supervision.

[1] Intellectual Crime. By Janet Chance. London: Noel Douglas. 1933. Pp. 154. 5*s*.

X RAY APPEARANCES IN THE LUNGS OF THE NEARLY DROWNED

RECORDS of X ray examinations of the lungs made shortly after the persons concerned had nearly been drowned are not common. In *Norsk Magazin for Lægevidenskapen* for February, Dr. A. Klingenberg draws attention to a curious feature noticed in two such radiograms—a small-spotted woolly shadow extending from the first rib to the base of the lung on both sides. One was a woman, aged 25, previously healthy, who had spent at least ten minutes under the water. After water "by the litre" had been emptied out of her and artificial respiration applied, she recovered so far that about an hour after the accident a doctor found nothing amiss with the lungs. He prescribed a warm drink and propping up in bed. Later she had a transitory attack of dyspnœa, and in a few hours she became much worse, auscultation of the lungs revealing many coarse râles; these soon cleared up on injection of a cardiac stimulant, but the patient remained cyanosed, with a pulse-rate of about 100. She was admitted to hospital, at first comatose. There were then tracheal râles, the pulse was 136 and irregular, the respiration was 52 and superficial, the alæ nasi were dilated. She recovered after stimulation, obtaining relief from oxygen, but remained very drowsy with superficial respiration. On the following day, 34 hours after the accident, a radiogram showed the shadow described above, which had completely disappeared when another radiogram was taken five days later. The second case was that of a man, aged 42, who had been very drunk when he fell into a river, where he had lain for an unknown interval before being pulled out; a radiogram taken seven hours after the accident showed the same curious shadow over both lungs as had been noticed in the former case. Three days after the accident the shadow on the left side had completely disappeared. Dr. Klingenberg discusses four possible explanations, of which in his opinion the second and the fourth are the most likely to be true: inspired water, œdema of the lungs, broncho-pneumonia, and pulmonary atelectasis.

THE DOCTORS OF BERKSHIRE

IN this country the production of a collection of scientific reports by members of the staff of a hospital unattached to a teaching school is not common. The neat volumes[1] issued by the Royal Berkshire Hospital in 1932 and 1933 are the more valuable in that they contain not reprints of work already published elsewhere, but original articles for the most part read to the Reading Pathological Society. Among the most interesting of the articles are those contributed on surgical subjects by Mr. J. L. Joyce, on lesions of the cardiovascular system by Dr. Gordon Lambert, and on pathology by Dr. John Mills.

[1] Royal Berkshire Hospital Reports. Edited by H. S. Le Marquand. 1932, pp. 159; 1933, pp. 160. Copies may be obtained from the Secretary of the Hospital, Reading. 10*s*. 6*d*. each volume.

Mr. Joyce's study, in the 1933 volume, of the fate of 94 cases of malignant disease of the colon seen by him between 1917 and 1932 is particularly interesting and shows the statistical value of the simple follow-up system adopted by him for all his cases, which is described in another contribution to this volume. Of the 94 patients 53 were treated by some form of resection, though many of them were on the very borderline of operability. Forty-two patients survived the operation; 14 are alive and apparently well, 7 of these having been operated on only within the last two years and the others within periods over three years (3), six years (1), eight years (2), and twelve years (1). Two more are alive but have secondary deposits in the liver; 25 are dead and 1 only is untraced. Fourteen deaths followed palliative operations; 11 followed resections, and in these latter the cause of death is analysed. Four died from leakage and peritonitis, 1 from post-operative pneumonia, 2 from pulmonary embolism, 1 from auricular fibrillation, 2 from shock, and 1 from gas gangrene of the abdominal wall. Mr. Joyce deduces valuable lessons from these failures in respect of pre- and post-operative treatment. Dr. Lambert has supplied to the 1933 volume an essay on the interpretation of electrocardiograms, illustrated by remarkably clear diagrams and drawings which will be appreciated by practitioners; both volumes contain accounts by him of interesting and unusual cases. Dr. Mills has prepared this year a review of the relation of stomach function to anæmia, which takes account of the mass of new work on this subject recently published. Other contributors include Dr. Paul Cave, Mr. E. A. Dorrell, Dr. L. M. Jennings, Dr. Leslie Powell, Mr. W. B. Secretan, Dr. E. H. W. Tozer, and Dr. H. S. Le Marquand, who is the chief editor. The authors have certainly succeeded in their modest object of recording useful information which might otherwise have been buried in hospital notes, and in doing so have provided readable and interesting articles which will be appreciated by many besides "the doctors of Berkshire" mentioned in a preface.

GASTRIC SECRETION IN ANÆMIA

THE experiments of Castle and his co-workers have emphasised the importance of a study of gastric function in all types of anæmia. The technique they developed has recently been applied by S. J. Hartfall and L. J. Witts [1] in this country and by W. Dameshek [2] in America, in addition to the ordinary methods of analysis, to a series of cases of both Addisonian pernicious anæmia and idiopathic microcytic anæmia. The results obtained in Addisonian pernicious anæmia confirm Castle's findings, but those obtained in idiopathic microcytic anæmia challenge the interpretation Castle has given of his findings. In microcytic anæmia also there may evidently be an extremely poor secretion of the intrinsic factor which reacts with beef muscle to produce the curative principle in Addisonian pernicious anæmia. The amount secreted varies from case to case. It bears no relationship to the total volume of juice secreted, but may possibly be correlated with the pepsin content. In one patient not only did the gastric juice contain no free acid on nine occasions, but pepsin was almost completely absent; the total chloride was low, and little intrinsic factor could be demonstrated. It might be suggested that the small volume of juice secreted would explain the relative inefficiency of digests prepared from cases of microcytic anæmia. The quality, however, rather than the quantity of juice appears to be the important factor since a considerable difference in potency was detected in the juice of two patients who both secreted the same quantity. Dameshek, as the result of one experiment, suggests that the gastric juice in idiopathic microcytic anæmia may be defective in the digestion of organic iron. He obtained a slight but definite reticulocyte response when a mixture of egg and spinach digested with healthy gastric juice was fed to a patient with idiopathic microcytic anæmia. The underlying cause of the defect in gastric secretion, whatever the nature of this deficiency may prove to be, also remains to be determined. Hartfall and Witts emphasise the influence of heredity. They suggest that what is inherited is a gastric mucosa of poor secretory capacity and diminished resistance to the wear and tear of life rather than an inborn error of secretion. Precipitating factors present in more than two-thirds of their cases were operative or other trauma, gastritis from direct irritation of the stomach, and "hæmatogenous toxic agents." This somewhat ambiguous expression includes pneumonia, acute and subacute rheumatism, and exophthalmic goitre. It is clear that factors capable of disturbing normal gastric function require further study as well as abnormalities responsible for disordered hæmopoiesis.

[1] Guy's Hosp. Reports, 1933, lxxxiii., pp. 24 and 3.
[2] Jour. Amer. Med. Assoc., 1933, c., 540.

HYPERTHERMIC TREATMENT OF CONSTITUTIONAL DISEASES

THE treatment of mental disorder by various forms of artificially induced fever is no new thing. The reaction has usually been produced by injections of nuclein, tuberculin, and similar protein substances; living organisms of tertian malaria, and inorganic materials such as colloidal sulphur. Recent workers have used electrical diathermy, and a number have resorted to the simple method of hot packing. Dr. Franz Walinski has for some years practised a method of inducing hyperæmia by the injection of hypertonic saline solution followed by a warm bath and packing. In this way it is possible, he says, to raise the body temperature considerably over long periods, and to avoid the dangers inherent in other forms of artificial fever. Five years ago [1] he reported clinical and serological improvement in two cases of general paralysis, three cases of tabes, and one of ankylosis, three cases of disseminated sclerosis, and one of arthritis deformans. He has just published his results for the last five years [2] in 353 assorted cases. He claims comparatively high improvement figures in tabes; 28 per cent. returned to work, and 60 per cent. much improved. In tabes the method proved more successful than malaria, but in general paralysis its results were markedly, and in syphilis of the central nervous system slightly inferior. Of patients with disseminated sclerosis he claims to have restored 10 per cent. to full working capacity, and 30 per cent. to moderate capacity, and to have slightly improved 16 per cent., but the remissions occurring naturally in this disease make these results difficult to substantiate. His best results were in the arthritic group; by the test of ability to return to work the method was successful in 91 per cent. of cases of inflammatory arthritis, and in 65 per cent. of those of arthritis deformans, while seven patients suffering from arthritis as a sequel of gonorrhœa were all able to return to their occupations. Physiologically this treatment produces an increase of chlorides and protein derivatives in the blood, and a rise in the leucocyte count; the blood-sugar and alkaline reserve diminish at the beginning and then increase. These results

[1] Med. Klin., 1928, xxiv., 488.
[2] Deuts. med. Woch., 1933, lix., 398.

are perhaps the less encouraging in that this method of treatment, apart from the saline injections, has been practised from immemorial antiquity, and has yet not proved sufficiently successful to have gained general adherence.

LORD CHELMSFORD

THE sudden death of Lord Chelmsford last week has removed from us a public servant of the first distinction, as demonstrated by the number of high official posts which he held. Governor of New South Wales, then Viceroy of India, then First Lord of the Admiralty; quite recently he accepted the Wardenship of All Souls, a fitting phase with which to close the life of one who as scholar, athlete, and statesman had been so great a son of Oxford. Lord Chelmsford, who was always interested in the great problems associated with the progress of medicine in India, became Chairman of the British Empire Leprosy Relief Association, which began its definite work some nine years ago. At the opening meeting, held at the Mansion House, Lord Chelmsford outlined the situation which led up to the formation of the Association, and, while emphasising its imperial character, urged business men to look upon it as health work for the Empire. Since its inauguration in 1924 the Association has made grants for initiating work amounting to £16,500, beside distributing many thousands of doses of anti-leprotic drugs. Its journal, the *Leprosy Review*, acts as a clearing-house for the experience of widely separated workers, and keeps them informed of progress. In coöperation with the Zanzibar Government, it has recently appointed a medical officer for special investigation of leprosy work in that island. Through its Indian Council, research and training are maintained at the School of Tropical Medicine, Calcutta, and for some years past a survey of the incidence of the disease in infected areas of that country, together with educational propaganda, has resulted in the opening of many treatment centres. By the above methods, and by striving to arouse public interest, this Association is playing an essential part in combating one of the worst scourges with which medical science has to deal. Lord Chelmsford, by acting from its birth as Chairman of the General Committee of the Association, rendered through its offices medical service to humanity of prime importance.

THE GRATUITOUS TREATMENT OF COLLEAGUES AND THEIR FAMILIES

"DOG does not eat dog," was the usual reply last century to the offer of a fee by one medical man to another for the care of himself or of his immediate family. There was never any rule that such treatment should be gratuitous; it was no more nor less than a manifestation of good fellowship between colleagues. It was always liable to abuse, as are all such informal personal arrangements, although on the whole it worked well enough in most European countries, especially in times when the doctor was not as hard pressed to earn his daily bread as he is at the present time. In Germany, it seems, the position has altered materially. Nowadays in country practice more than 90 per cent. of the work is done under panel contract, and outside the towns at all events the doctor cannot afford to give gratuitous service. The increase in number of doctors has sharpened the competition, and led to the practitioners in most areas knowing each other personally less well than used to be the case. This change of attitude is recorded in the very frank but sympathetic study of the late Dr. Albert Krecke, one of the editors of *Das Blatt des Arztes*, and the author of a popular book entitled "The Doctor and his Patients."[1] Krecke has put his finger on some of the difficulties in gratuitous professional practice. It was a natural gesture between colleagues who worked alongside and who did each other's holiday duty, but nowadays it seems that the German doctor when he is ill turns not to the general practitioner but to the specialist, many of whom may have quite a number of colleagues or their wives to see each day. Of course, when it is just a friendly word of advice the question of a bill does not arise, but the moment it comes to detailed examination, whether microscopic, X ray, hæmatological, and so forth, it is only reasonable, Dr. Krecke suggests, for some fee to pass. There is, to his mind, a good but rarely expressed reason why this should be so—namely, that the doctor who is a patient may instinctively feel that he will not be treated quite so well when he is taking time and trouble for which his physician is in no way recompensed. Krecke has been the recipient of confidences from doctors who have felt that they were not examined by their colleagues quite with the exactitude which they had hoped for; and the position of their wives is even worse. In many cases abroad it seems to have come to this pass, that doctors' wives have hesitated to call in medical help and have neglected on this account some grave disease. Which is just what, in less serious vein, "Mrs. Dose" remarked about "Mrs. Septum," who "*might* be going to have an operation in the morning, but nothing was settled because Sir Cadogan Colon was so Frightfully Busy, and, of course, Mrs. Septum being a Doctor's Wife, he would have to fit her in when he could."[2] Dr. Krecke's advice is that whenever the doctor is asked by a colleague to be allowed to pay a fee, he should frankly send him in a bill, basing his charge on the minimum rate for that kind of service. This, he thinks, is in the long run much more considerate than telling him to pay what he likes or leaving him to make a gift. If the choice is left to the doctor himself, the gift or the fee may be far larger than would have been gladly accepted. And of gifts he would make an end. If it must be a gift, however, a medical book, with the opportunity of exchange, is safe. The doctor who gives a colleague a piece of furniture runs the risk of adding to an unwanted collection of vases, sofa cushions, cigarette boxes, and the like; a "good carpet" is more likely to be acceptable. With eatables one must be specially wary; but, we are told, it is always right, at all events in Germany, to offer a colleague good wine.

THE RELATIONSHIP OF PLEURISY TO TUBERCULOSIS

A RECENT discussion in Denmark has once more drawn attention to the width, and possibly depth, of the gulf separating the general practitioner from the sanatorium physician in connexion with the ætiology of most cases of pleurisy. For a long time the studies of Allard and Köster, published in 1911, held the field by virtue of their big figures so conscientiously and skilfully handled. It will be remembered that they succeeded in tracing no fewer than 571 persons who, several years earlier, had been treated for pleurisy, labelled at the time in most cases as "idiopathic." They found a subsequent tuberculosis mortality of 21·5 per cent., and a total tuberculosis morbidity of 47·1 per cent. These investigations were, however, conducted during a period antecedent to the practice of systematic X ray

[1] Vom Arzt und seinen Kranken. Munich: J. F. Lehmann. 1932. Pp. 378. M. 480.
[2] Joyce Dennys: "Mrs. Dose: the Doctor's Wife." London: John Lane. 1930.

examinations of the lungs. To what extent is this practice going to modify Allard's and Köster's findings? An answer to this question may be sought in a paper published in *Acta Medica Scandinavica* (Fasc. V.–VI. 1933) by Dr. R. Borelius who has traced 194 of the 230 cases of pleurisy treated in a hospital in Lund, Sweden, in the period 1912–21. The pleurisy was "wet" in 179 of these 194 cases, "dry" in the remainder. This investigation was conducted in 1929, the minimum observation period being seven years. There were 47 deaths, 23 from pulmonary tuberculosis, 5 from other forms of tuberculosis. Of the 147 survivors, 5 were suffering from well-defined pulmonary tuberculosis; the remainder were seemingly in good health. But when 102 of them were subjected to X ray examinations and other tests, several showed tuberculous changes. Altogether evidence of tuberculosis was found in 66·3 per cent. of this material—a ratio whose excess over that of Allard and Köster must largely be attributed to advances in the radiological field. The conclusion Dr. Borelius draws from his findings is that every case of pleurisy deserves a very careful examination. Even if it prove negative the patient should be kept under periodic observation, and should, if possible, undergo a prophylactic course of treatment at a sanatorium. It should be noted that his observations are mainly concerned with pleurisy with effusion; in those cases in which no effusion is demonstrable—and they are numerous—there is as yet insufficient evidence to warrant any sweeping verdict as to their alleged tuberculous character.

THE MINIMUM COST OF AN ADEQUATE DIETARY

THE punctuality with which the committee set up by the *Week-End Review* to investigate the minimum cost of an adequate dietary has issued a report deserves instant recognition, though a critical estimate of the data selected for presentation in a closely written document, and of the deductions made from the data, must await further consideration. The committee consisted of five persons, including experts on public assistance, dietetics, working-class conditions in typical areas, and household budgets, with Prof. A. L. Bowley, professor of statistics at the London School of Economics, as chairman. No medical man served on the committee, but physiology was represented by Prof. V. H. Mottram. The report which takes up three pages of the *Week-End Review* of April 1st is divided into six sections: (1) Dietary; (2) Ascertainment of Sample Prices; (3) Applicability of the Minimum Diet and other Questions; (4) Seasonal Variation; (5) Applicability of the Ministry of Labour's Index-number for retail food prices; (6) Administration.

Some of the main points in the committee's findings are as follows:—

The cheapest diet suitable *on paper* for an adult male not engaged in muscular work costs 3*s.* 2½*d.* per week, but digestive, culinary, and psychological considerations rule it out for practical purposes. The cheapest *practical* diet in current English urban conditions for adult males not doing muscular work costs about 5*s.*; for women 4*s.* 2*d.*; for children 2*s.* 9*d.* (1–2 yrs.), 3*s.* 4*d.* to 4*s.* (2–8 yrs.), 4*s.* to 4*s.* 10*d.* (9–13 yrs.).

Tables are supplied to indicate: (*a*) The caloric ratio between men, women, and children. (*b*) Actual weekly minimum diets for children of various ages. (*c*) Actual cost of food at each year of age. (*d*) Ratio of cost of food for each year of age equated with caloric ratio in (*a*). (*e*) A detailed minimum weekly food budget for a typical family, shown in items of food, in weight, in cost, in calories, and in protein, calcium, and iron content. (*f*) The average seasonal movement of retail food prices month by month.

The committee find that the variation from London standards of retail food prices in various urban areas of England and Wales is not considerable, and the Ministry of Labour's index gives a useful approximation to the movements of retail food prices.

SEPTICÆMIA FOLLOWING INJECTION FOR VARICOSE VEINS

AT an inquest presided over by Dr. Edwin Smith last week, two cases of septicæmia following injections of sodium morrhuate for varicose veins were investigated. Although at the inquest it was not possible to determine precisely how the infection was caused, the occurrence is of sufficient importance to warrant further notice, particularly as apparently cases of infection have occurred in other institutions. The two cases which were the subject of the inquest occurred in a group of twelve patients injected. The majority of these suffered no ill-effects, but in addition to the fatal cases one other case developed a local abscess. The organism in all three cases was *Staphylococcus aureus*. Infection from needles is excluded since one of the fatal cases was the first to be injected with a needle kept overnight in spirit and washed through with eusol before use; and before use on the other fatal case the needle remained for 20 minutes in spirit after being washed through with eusol and sterile saline. We are informed that the 5 per cent. sodium morrhuate solution was made up at the hospital concerned in accordance with a practice which has not varied in a series of over 10,000 injections which were without incident, and involved sterilisation in a water-bath at a temperature just below boiling in the presence of 0·5 per cent. phenol. We understand that experiments were performed at the laboratories of the hospital with a specimen of the solid sodium morrhuate which is supplied to the hospital and is sterilised there in bulk before use. The specimen tested gave a rich growth of *Staphylococcus aureus* on blood-agar after 48 hours' incubation. While, therefore, it is quite impossible to determine with certainty the cause of the septicæmia, it appears that the sterilisation of sodium morrhuate in bulk presents difficulties which merit attention.

WE regret to announce the death, on April 4th, of Mr. J. Herbert Fisher, consulting surgeon to the Royal London Ophthalmic Hospital and consulting ophthalmic surgeon to St. Thomas's Hospital.

Dr. Percy Theodore Hughes, who died at Bromsgrove on March 29th in his sixty-second year, had been medical superintendent since 1906 of the Worcestershire Mental Hospital at Barnsley Hall.

Summer Time will commence in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday morning next, April 9th, at 2 A.M., when the hands of timepieces should be advanced one hour. It will end on Sunday, Oct. 8th.

EDINBURGH SPEECH CLINIC POST-GRADUATE COURSE. A short course of instruction on the nature and treatment of disorders of speech, which will be conducted by Dr. Douglas Guthrie, Mr. George Seth, and Miss Elsa Davidson, at the Speech Clinic of the Royal Hospital for Sick Children, Edinburgh, begins on May 8th. The course, consisting of six meetings, will deal with the evolution of speech, the anatomy and physiology of the mechanism which produces it, the psychology of speech, and the treatment of speech disorders. Further particulars may be had from the secretary, Edinburgh Post-graduate Courses in Medicine, Dean's Office, New University Buildings, Edinburgh.

SPECIAL ARTICLES

THE MEDICAL CURRICULUM

BY FF. ROBERTS, M.D., M.R.C.P.

PHYSICIAN IN CHARGE OF THE DOUTY X RAY CLINIC, ADDENBROOKE'S HOSPITAL, CAMBRIDGE

"Nor yet did he know that ideas, no less than the living beings in whose minds they arise, must be begotten by parents not very unlike themselves, the most original still differing but slightly from the parents that have given rise to them .... He thought that ideas came into clever peoples' heads by a kind of spontaneous germination, without parentage in the thoughts of others or the course of observation."—*Samuel Butler.*

THE views which have recently been expressed in THE LANCET and elsewhere regarding the medical curriculum have revealed one indubitable fact, and that is that clinical teachers on the one hand and preclinical teachers on the other hold diametrically opposite views concerning the scope and function of preclinical instruction. The clinicians complain that students come to them inadequately prepared, their minds wrongly orientated for their life's work; the preclinical teachers retort that their business is to impart a scientific and not a vocational training. Being convinced that this antithesis is both the chief cause of the present discontent and the chief impediment to the reformation which so many desire, I venture to set forth the views which I have formed after 21 years spent partly in teaching physiology and partly in medical practice.

In discussing this question, two points should be kept clearly in mind. The first is that clinical success is not necessarily due to preclinical success. A man after doing well in physiology may become a distinguished physician not merely because of his physiological knowledge but also because his abilities which made him successful in the one field make him successful in the other. The second is that a man who has had a university education may owe his subsequent professional success not so much to the scientific instruction which he received there as to the intellectual, social, and general environment which is the chief advantage of university life.

CAN PHYSIOLOGY AND MEDICINE BE RECONCILED?

Of all the preclinical subjects physiology has suffered the most criticism. Those who have deplored what they call the divorce between physiology and medicine have been content to regard it as a temporary estrangement which time will heal. To this view I cannot subscribe. The causes of the estrangement to my mind go much deeper and well merit full consideration.

First the tendency of every scientific researcher is to simplify the matter with which he is dealing. The physiologist is, let us say, studying the effect of one external condition on a biological process. To do this he must strip the problem of every complicating factor. A human being is too complicated. A frog's nerve is easier. Even this may be too complicated. He tries a single cell. Still he is baffled. He tries the cell wall, and so on until he gets down to a physico-chemical problem which can be expressed in mathematical terms. I am far from belittling such work. I believe it is possible that from it there may at any moment emerge some discovery of overwhelming importance, just as came from Faraday's researches. But the inevitable result of absorption in work of this kind is to make the mind irritated by any complicating factors. The physiologist so engaged not only forgets whatever clinical knowledge he ever had, but loses his taste for it. Such a person confronted let us say by a child with a temperature, a rash, and a large spleen feels bewildered beyond words and does not know where to begin. Clinical problems cease to interest him because they contain too many unknown quantities, because they are too complex for him. In narrowing his field of operation the physiologist is in a sense following the path of least resistance. A distinguished physiologist once said to me: "It's much easier to work on a frog's nerve than on a man." Many clinicians have deplored the fact that physiologists do not go into the wards. The reason is that they do not want to go, knowing full well that they would not know what to do if they got there.

Secondly, the wide and fruitful field of physiological research which has been opened up in non-human directions has led to the appearance of a number of physiologists who are not medically qualified. Many a student who originally set out with the intention of becoming a doctor has been diverted into a physiological career. There are others who pass through a hospital training for the sake of the greater economic security which qualification gives and return to physiology at the earliest moment, carrying with them a bare minimum of clinical knowledge which a few months are sufficient to efface. The teaching of physiology is thus passing, if it has not already passed, into the hands of those who are either ignorant of or care nothing for medicine.

Thirdly, the physiologist like any other scientist is concerned only with that aspect of truth which is capable of demonstration by experiment. With the knowledge which is gained by the use of the five senses, on which clinical medicine is still mainly built, he has no sympathy, nor can he appreciate the subtleties of deduction and judgment which are based upon the information thus obtained. He is inclined to think that all medicine which is not founded upon laboratory experiment is little better than a sort of magic, an occupation thoroughly unworthy of pursuit by a scientifically trained mind. Some even go as far as to think that the only interest in medicine must be the financial one.

Fourthly, while the clinician with the relatively imperfect means at his disposal must many times a day come to rapid decisions in matters of life or death, the physiologist works under no such stress. It matters little whether he expresses an opinion to-day or six months hence apart possibly from the stimulus of competition.

Lastly, in all academic circles, promotion comes as the reward of success in research. No credit is given for ability to make difficult things plain to ordinary minds. Such a gift is in fact sometimes regarded contemptuously as an attribute appropriate only to "coaches." But teachers who are interested primarily in research and only to a subsidiary degree in elementary teaching, are apt to have two failings. They tend to give disproportionate attention in their lectures to that part of their subject in which they themselves are specially interested, and also to adapt their instruction to the minds of their exceptionally gifted students. As has frequently been said they teach as though all their students were destined to become researchers like themselves. In point of fact the physiologist is in much the same position as the unmarried schoolmistress instructing a class of girls who are destined for matrimony. The clinician, on

the other hand, teaches what he practises to those who are going to practise it themselves, and the results of his practice are plain for all his students to see.

The estrangement between the physiologist and the clinician is therefore due to differences in temperament, environment, and outlook, amounting to nothing less than mental incompatibility. For my part I see no sign of any rapprochement. On the contrary, I think the gulf will widen rather than narrow with time. But in the mutual attitude of physiologists and clinicians there is this difference. Clinicians, while not interested in modern physiological research as such because most of it is beyond their understanding, are nevertheless eager to test any physiological truth likely to be of practical value. Those engaged in teaching physiology, on the other hand, are superbly indifferent to those advances in medicine and surgery which have not originated in their laboratories, and are reluctant to modify their teaching in accordance with clinical thought. To my mind it is this attitude of the physiologist which is the principal cause of the trouble.

HOW SHOULD THE MEDICAL STUDENT LEARN PHYSIOLOGY?

The purpose of physiology as I have always understood it is to teach not only the normal working of the organism but also the laws whereby the organism or its component cells react to changes in the environment. In no field can such reactions be found occurring as naturally and abundantly as in clinical medicine. For example, the great physiological truth that the strength of contraction varies with the initial length of the muscle-fibre is the basis of compensation of the heart in mitral lesions. Yet physiologists ban all reference to disease as something only calculated to contaminate scientific minds. I said all reference, but there is one curious exception—the endocrine system. No text-book is complete without illustrated descriptions of myxœdema, hyperthyroidism, and acromegaly, the chapter which incidentally students always know best. Why pathological conditions should be so profusely described in what may be called the fringe of the subject and rigidly excommunicated from its substance I cannot understand.

It is of course the main function of the preclinical teachers to teach the student the physico-chemical and biological principles upon which medicine is partly founded. Principles, however, are useless without the power of applying them, just as a piano is useless unless there is someone to play it. It is the general experience of clinical teachers that students, even when well grounded in physiology, are incapable of or at any rate slow in realising that medicine is a field to which physiological principles can naturally be applied; they fail to see disease as a departure from normal function. The physician who counsels his students to forget their physiology is held up by physiologists as the supreme example of obscurantism. But he is not such a fool as he is made out if by his advice he means: "You may have principles, but if you can't apply them you had better start afresh with those I shall give you." In my experience the capacity for inductive reasoning is only shown by very few undergraduates. It should be the business of the teacher while imparting principles to lose no opportunity of indicating their significance, using clinical examples when these best illustrate the point. Quite apart from the added interest, hateful as such a consideration may be to the orthodox physiologist, it is only by this means that the impressionable mind of the student can learn to be continually on the look out for opportunities to apply his physiological knowledge. A student trained in this way would have his knowledge not shut up in a shell but provided, so to speak, with feelers ready to attach themselves to the complementary feelers thrown out later on in his clinical studies. Only in this way could he learn to acquire and to retain throughout his career a lively sense of the proper relationship between physiology and medicine.

PHYSIOLOGICAL THEORIES AND MISCONCEPTIONS

The worst feature of physiological teaching is the emphasis laid upon theory—theories of lymph formation, of the action of enzymes, of the mechanism of renal secretion, of muscular contraction, of the mode of absorption of oxygen by the lungs, of the causes of colour-blindness, of exogenous and endogenous metabolism. The student learns the arguments for and against, but from the very nature of the problems involved he has no experience of his own from which to exercise judgment. He comes to regard these subjects as the Homeric but unreal struggles of persons whose intelligence must far transcend his. It is of course right that his mind should be alive to ultimate causes. The fault lies in emphasising the cause or possible cause of a process at the expense of an adequate knowledge of the process itself, its variations within normal limits, and the part it plays in the life of the organism as a whole. In studying the heart for instance, the student's attention is directed principally to the mechanism of the heart-beat with the result that he remains ignorant of such things as the normal irregularities and the limits of the normal response of the pulse to exertion. An incidental result of excessive preoccupation with theory is that students cannot translate the language of the laboratory into the language of daily life. They know all about diet in grammes of protein, fat, and carbohydrate, but have no idea what this means in pounds and pints of ordinary food. What is even worse is that descriptions of some physiological processes are actually wrong. The text-books minutely describe experiments on animals or on excised pieces of gut to show whether the movements of the small intestine are neurogenic or myogenic, but no book which I have read gives a complete and accurate account of the movements of the human alimentary canal. Let me quote two examples taken from current text-books:—

> "It is not easy to see much [i.e., radiologically] in the small intestine but under favourable conditions the process of segmentation may be observed especially in the last few inches of the ileum."
>
> "It has been made out that the food, having arrived into a particular section, say the stomach, is imprisoned there for a time by closure of the sphincters. During this imprisonment it is thoroughly churned backwards and forwards until the enzymes have had time for their work, and the products of their activity, if absorbed in this part, have been taken into the blood and lymph. The process of churning, whose mechanism can be observed best in the small intestine, does not consist in a true antiperistalsis, preceded by a wave of inhibition, but by a series of local contractions dividing the contents into separate masses at different places in turn and thus pushing them upwards and downwards."

The writer, it may be incidentally observed, evidently thinks that the gastric and intestinal movements are alike. This paragraph is followed by an account of the acid control of the pylorus, an idea which clinicians have long since abandoned. There could be no more serious indictment of orthodox physiological teaching than the fact that clinicians other than radiologists learn these movements for the first time from the cinematograph films which are shown to medical societies by enterprising chemists.

and dealers in photographic material. I am convinced that most mistakes in medicine are due to ignorance of facts and faulty observation. A man who makes a mistake through either of these causes will not be forgiven even though he be a walking encyclopædia of scientific principle and theory.

DEMONSTRATION AND EXPERIMENT

In comparison with other subjects, practical physiology is at a disadvantage owing to legal restrictions. But this could, I think, be to a great extent compensated for by a fuller use of the cinema. Take, for instance, the autonomic system. Most of its actions can be very vividly demonstrated by animal experiment, and could be easily filmed. At present the student learns the autonomic system as a plane figure, and commits to memory a list of its actions, most of which he has never seen. As regards those exercises which the student can perform, their whole value lies in training his powers of observation and reasoning and in teaching him manual dexterity. But many of the practical manuals resemble cookery-books in that they give fool-proof directions but omit the reason for each stage of procedure. The natural consequence is that the student cannot remember the steps of an experiment because he has never been told why they are necessary. His last days before an examination are spent in a feverish attempt to memorise the technique of experiments which he may have carried out several times. I have known students after two years spent in practical histology ask how long they should keep a section in eosin, and so on. Another fault is that some experiments are very tricky, and depend upon a certain amount of luck. Only those exercises should be set which, if performed with care, must lead to a successful result. A demonstrator should not have to say: "Don't worry about this experiment; it often doesn't come off." In histology too much attention is concentrated on details of very little importance, such as the distinction between a serous and mucous salivary gland (a feat which I have known to defy an expert), and the recognition of minute objects in the brain-stem, such as the accessory olive. It is of the highest importance that the student should succeed in what he is doing or that the reason for his failure should be explained to him. If he gets into the habit of failing in practical work he begins to think that the subject is too difficult for people like himself, and that he must struggle through it as best he can. He loses confidence in himself, mistrusts his own senses, and develops an inferiority complex.

PRECLINICAL SUBJECTS AND THEIR TEACHERS

Of the other preclinical subjects I shall write quite briefly. Anatomy urgently needs drastic reform. What is and what is not necessary in topographical anatomy should be settled by a committee of anatomists and clinicians. Increasing the size of the dissecting manuals should be made a criminal offence. In chemistry rather less attention might be paid to inorganic, particularly commercial processes of manufacture, and more to physical chemistry. In zoology the syllabus is adequate, but botany should be cut down to a brief study of the simpler forms of plant life. In physics there is too much mechanics but far too little electricity, the syllabus of which has not kept pace with the enormous growth in the clinical applications of electro-magnetic radiations.

Of the preclinical subjects collectively I am of the opinion that the training which they give loses rather than gains from the subdivision of the subjects and the separation of the subdivisions from one another by bricks and mortar. It has become the fashion to lecture on "aspects" of a subject with the result that the student loses sight of the activity of the organism as a whole.

In conclusion I may point out that preclinical teachers, being concerned only with the first years of medical education, are in the worst possible position to estimate the adequacy of their instruction since they lack the knowledge and experience which are essential in order to judge the finished product. This disadvantage, however, does not prevent preclinical teachers from expressing their views with much confidence. The speakers at a recent discussion by the senate of Cambridge University may be classified as follows:—

Clinicians	6
Pathologists	2
Total	8
Physiologists and biochemists	6
Zoologists	3
Botanist	1
Masters and tutors of colleges	3
Total	13

The preponderance of the preclinical and lay view is significant. Clinicians have much to learn in the matter of organisation before the reforms which they desire can come to pass.

MEDICINE AND THE LAW

Physio-Medical Practitioner Acquitted of Manslaughter

ON the third day of his trial at Manchester assizes last week Mr. C. C. Abbott, described as a physio-medical practitioner, was acquitted of the manslaughter of Charles Taylor, a boy of 11 years of age, who had died of meningitis. As previously reported, the accused was committed for trial on a coroner's warrant, the jury at the inquest having found that his treatment had caused the death of the child. Commitment merely on a coroner's warrant is by no means unknown, but the more usual course was followed of also indicting the accused after magisterial proceedings. The case against the accused was by no means strong. The prosecution had, as Mr. Justice Lawrence pointed out, to satisfy the jury beyond all reasonable doubt that Mr. Abbott's treatment had accelerated the boy's death, and, further, that the treatment was so negligent and unskilful that it went beyond ordinary civil negligence—i.e., the degree of negligence which would entitle a plaintiff to recover damages. Good medical evidence for the prosecution could establish that a lumbar puncture and the preparation of a serum might have prolonged life, but the witnesses could necessarily not be positive that prolongation of life or cure would certainly have resulted. The defence could emphasise the fact that two registered medical practitioners had virtually given up the case as hopeless; in their view epilepsy was incurable. If the case was hopeless, it would not matter if the treatment by the accused was useless, provided that it did no positive harm. The parents of the boy agreed that Mr. Abbott's treatment had, at some moments and in some degree, improved the boy's condition. There remained an allegation that the accused had been at fault in not answering telephone calls immediately. This was a minor aspect of the suggested negligence, and it had little effect upon the case. The opening speech for the Crown represented

the accused as an absolutely ignorant and impudent impostor. The defence, conducted with vigour by Mr. Hemmerde, represented him as a bona-fide research student who had worked his way up from life in a colliery to equip himself for the practice of healing, and who was now being attacked because he dared to use "unofficial" methods in medicine. He had practised as a herbalist for 23 years; his medicines were good and proper. The judge, in summing up to the jury, described the accused as having given his evidence with a very high degree of skill and competency. Much of the evidence concerned his use of the Abrams box. In the judge's view he had not used it merely to impress simple and gullible people. As usual, the rather guarded report of the committee of five assessors in 1924 was cited as indicating that the Abrams system might have something in it. The point had been made against the accused that he omitted to tell the boy's parents of the possibility of treatment by lumbar puncture. The judge thought this fell far short of criminal negligence on the part of a herbalist.

The case put forward against Mr. Abbott was that the boy had been under his medical care from April, 1932, till death occurred in January last. When his mother first took the boy to the accused there was another person present, described as Dr. Foster, a London specialist. They advised circumcision, which was at once performed. A week later the Abrams box was used. The accused, Foster, and someone called Dr. Hughes were there. Mrs. Abbott stood with one foot on a metal plate; a handle attached to the machine was held to the top of her head, and Foster moved a glass rod over her body. Numbers were called out and recorded. The accused produced from a cupboard metal discs and bottles of liquid which were placed on or in the box. The parents were given to understand that this enabled him to discover what was wrong with the boy and what were the right medicines. It was on this occasion, according to the boy's father, that it was announced that the boy suffered from nine different kinds of worms; some were on the brain, and a large one was in the region of the heart; when the right medicines were found, the worms would be dissolved. The patient was taken 12 times to the accused, and over £20 was paid for the treatment. On the night before he died, Mr. Abbott rubbed his head and chest with lotion which the prosecution suggested was useless for meningitis, a disease with which the accused was incompetent to deal. At the close of the evidence for the Crown, counsel for the defence submitted that there was no case to go to the jury, but the judge ruled otherwise. The accused went into the witness-box and described his own cure from tuberculosis by a Bolton herbalist. He himself had subsequently devoted his life to the study of healing. He had a library worth hundreds of pounds. He had the best herbs and oils available. Either he or his wife, who was very competent, dispensed them. He had used two Abrams boxes and was still experimenting with improvements. There were recognised vibrations for different diseases. The figure for cancer was 30,000,000 vibrations a second. He had traced and diagnosed things, including malignant ulcer, which had baffled official knowledge. He had cured four definite cases of pneumococcal meningitis and the patients were in court. He had no faith in serum treatment and he refused to practise it. Sir Auckland Geddes had given him a special exemption from war service so that he might carry on his practice. As regards the deceased boy, Mr. Abbott said he found no symptoms of epilepsy; circumcision had relieved him immediately. There was no indication of meningitis at a date in January, though he suspected congestion of the lung. At the close of his evidence the judge told the jury they could stop the case if they thought the charge was not made out. The jury did not take the hint, and other witnesses were called for the defence. They included Mrs. Abbott, Mr. Percy Bean, an analytical chemist who described the accused's drugs and equipment, and Dr. Percy Bean (son of the previous witness), who gave evidence about the mixtures and also stated that, on inspection of the Abrams box, his scepticism had been converted. Two physio-medical practitioners praised Mr. Abbott's knowledge. A labourer, discharged from the army as epileptic, attributed his complete cure to the accused. Another witness told how his wife, after 16 years of illness, had been cured by Mr. Abbott of paralysis all down her right side. The judge, summing up on the lines already indicated, advised the jury that it would be unsafe to convict. A verdict of "not guilty" followed.

THE MEDICAL ACT AND UNREGISTERED PRACTITIONERS

As the judge had explained, the jury were not concerned with any dispute between herbalism and orthodox medicine. Practitioners, whether registered or unregistered, were entitled to be judged by a similar standard. Registered practitioners have no monopoly of practice. It does not seem that the Medical Act had any bearing upon the course of the trial, though the judge observed at one point that there was some evidence that Mr. Abbott had passed himself off as a doctor though he was not qualified. The boy's father seems to have said that Messrs. Abbott, Foster, and Hughes were all introduced to him as "doctors." The boy's mother said she had always taken the accused to be a fully qualified medical man. On the other hand, the accused said that, though his patients might call him doctor, he always told them he was not a registered man. He did not want to be a doctor. His wife called him "Dar," not doctor; this was merely an abbreviation of darling. There had also been a suggestion that he claimed to be entitled to give death certificates. The boy's uncle gave evidence to this effect; Mr. Abbott had said: "I have death certificates in my office now, and I certified my own mother." Perhaps the witness did not distinguish between a death certificate and a notification of death. There is, of course, no legal interference with the practice of herbalism. It is nevertheless a matter of comment that, if persons choose the description "physio-medical practitioner," they do so with the knowledge that they may consequently be taken for fully qualified physicians or medical practitioners in spite of the prohibition in Section 40 of the Medical Act.

THE ABRAMS BOX

The acquittal of Mr. Abbott may stimulate electronic practice afresh. When prosecuting counsel took the line that the accused was a charlatan who deluded ignorant people with his automatic oracles, it was necessary to satisfy a jury firstly that the Abrams system was worthless, and secondly that Mr. Abbott knew it was. The first allegation was countered as usual by confronting the medical witnesses with the report of the 1924 committee and the names of its members. The second was disposed of by the evidently favourable impression made by Mr. Abbott in the witness-box. As the public will hardly trouble to refresh its memory of the Horder report, it may be worth while to refer again to the committee's

conclusions. After describing its investigations, the committee asked itself what relevancy the demonstrations bore to the diagnosis and treatment of disease. Its answer was that the conclusions left the position of the practising electronist as scientifically unsound and as ethically unjustified as ever they were: "they give no sanction for the use of E.R.A. in the diagnosis or treatment of disease, nor does there appear to be any other sanction for this kind of practice at the present time." The committee observed that it would be idle to deny that Abrams himself constantly put forward the most startling claims on the slenderest evidence, that he persistently evaded test conditions, that he expressed himself in a jargon characteristic of charlatanry, and that he had no scruple in selling or leasing to others, at high charges, apparatus crudely constructed and at best imperfectly developed. It may be admitted that Abrams's lack of scientific method and scientific conscience do not justify critics in dismissing the possibility that he may have stumbled upon a discovery of genuine scientific value. But it is not less misleading to assume that, though proof is absent, the discovery was made.

Loss of Memory: a Question of Responsibility

A case tried by Judge Holman Gregory at the London Guildhall raises a point of medico-legal interest. The facts were briefly these. A. B. promised to sign a guarantee for a sum of money for a business friend, C. D. On a certain Saturday A. B. goes at short notice into a nursing-home, to be operated on for the cure of an inguinal hernia. On the Monday morning he is given grs. 3 of nembutal by the mouth at 8.30, and the operation is performed at 9.30 under spinal analgesia. C. D., having learned to his surprise that his friend is in the home, goes there at 11.30 A.M. with a witness and the document of guarantee. They are shown straight into the bedroom, where A. B. is sitting up in bed reading a book. He says: "I know why you have come, let's get it over," and signs the document. A. B. is seen at 1.30 P.M. by his doctor, who finds him asleep, rouses him, and has a short conversation with him. Some time later A. B. says that he has completely forgotten signing and does not believe he signed; he repudiates the signature, and refuses to pay the money now due. C. D. brings the action to establish the signature and to make A. B. pay. Medical evidence for A. B. was to the effect that nembutal had wiped out his memory of signing, and also that as he was under the influence of the drug at the time he was not responsible. For the other side it was granted that memory of the act might have been completely destroyed, but that when he signed A. B. understood what he was doing and was responsible for it. This was the view taken by the judge, who found for C. D. with costs.

The first point to note is that a contract was formed when A. B. signed the document with the necessary formalities of witnessing. Needless to say, subsequent loss of memory is immaterial in itself. The next point is that the law does not lightly allow a man of full age to stultify himself (and to upset the arrangements of those with whom he has dealt) by denying his actions. People sometimes allege that they signed a document without reading it or fully appreciating it. Ordinarily they are likely to find themselves, in the legal phrase, estopped from pleading their own unwariness. If they are deceived into signing, the position is different; fraud will always enable the defrauded person to repudiate the transaction. In Lewis *v.* Clay the defendant was induced to sign his name in a space on a document otherwise entirely covered by blotting-paper. He was told he was witnessing a signature—but he had really signed a promissory note. The jury found that he signed in misplaced confidence and not in negligence. Russell, C.J., said Clay's mind "never went with the transaction." Similar observations were made in Foster *v.* Mackinnon, where a blind old man signed in ignorance induced by a false assurance of the contents of the document. In such a case, it was said, if there is no negligence, the signature is invalid. "It is invalid not merely on the ground of fraud where fraud exists, but on the ground that the mind of the signer did not accompany the signature." Signature in itself, then, is not conclusive, but in this range of decisions there is usually an element of fraud. That element was happily absent in the recent Guildhall proceedings.

What was the effect of the nembutal? Could A. B. prove that it deprived him of the knowledge of what he was doing? This, it seems, would not have been enough; there is something else to be proved. A man who by reason of a drug enters into a contract unawares is presumably in the same legal position as one who is drunk or insane. No absolute incapacity of contract attaches to drunkenness or insanity. The drunk or insane person can afterwards call the contract off if he was at the time of signing unable to understand what he was doing and if the other party knew of his condition. In a decision of 1892 (Imperial Loan Co. *v.* Stone) defendant, who had signed as a surety, pleaded insanity. Lord Bramwell once said that a man in this position ought perhaps to be deemed dead for the purpose of a contract. But the court insisted that Stone could not escape from his signature unless he showed that the other party was aware of his inability to understand the transaction. In the recent Guildhall case it seems not to have been suggested that C. D. knew A. B. was under the influence of a drug. The weight of evidence indeed was the other way. A. B. had promised, some days before, that he would sign the guarantee. When the paper was brought to him he showed a natural willingness to keep his word. The court would want strong evidence to prove that C. D. knowingly took advantage of A. B.'s incapacity. The decision of the judge amounts to a finding that A. B. knew what he was doing when he signed.

THE "CUTS BILL" IN THE IRISH FREE STATE

(FROM OUR IRISH CORRESPONDENT)

THE Minister for Finance of the Irish Free State has introduced the long threatened Bill for the reduction of the salaries of all public officials, and the Bill was hurried through a second reading the day after the text was published. Its official title is Public Services (Temporary Economies) Bill, 1933, but it is vulgarly known as the "Cuts Bill." Its operation is ostensibly limited to the financial year beginning April 1st, 1933. It deals directly with all salaries, fees, and other remuneration paid to civil servants, officers of the army, members of the Civic Guard, teachers in national schools and preparatory colleges, except salaries of very low grade. The salaries of judges and magistrates are not affected, as they are protected by the Constitution, but the Government has declared its intention of bringing in a further Bill to amend the Constitution and subject the salaries of judges and magistrates also

to diminution. Although the point has not been mentioned, the Bill appears to apply to the salaries of Ministers themselves, but it does not apply to the allowances given to members of the Senate and the Dáil. The Bill applies indirectly to all salaries paid to officers employed by local authorities and other bodies, including universities and colleges, which receive any grants from public funds. Several schedules lay down explicitly the deductions which will be made in the salaries of the several groups of Government officials. In each group the deductions are in ascending scale, which ascends more sharply as the higher grades are reached. A civil servant, for example, with a salary of £400 a year will suffer a deduction of 2 per cent. of his salary, or £8 a year, whereas a civil servant with a salary of £1000 will have to submit to a deduction of £42 a year. The deductions apply to professional as well as to lay civil servants, and, therefore, the medical officers of the Department of Local Government and Public Health, already rather ungenerously paid, are among those affected.

The salaries of the officers of local authorities and other bodies receiving grants from public moneys are dealt with indirectly. The Minister for Finance is empowered, after consultation with other Ministers concerned, to deduct such sums as he may think fit from grants ordinarily made to local authorities when such grants are wholly or partially available for the payment of salaries of those employed by such authority. Qualifying phrases make it clear that the deductions are intended to bear some relation to the deductions made in the case of direct employees of the Government. Deductions having been made in the grants, the local authorities are empowered, with certain qualifications, to make, with the approval of the Minister, deductions from the salaries of their employees. Similar powers are to be given to the Minister with regard to grants to universities, colleges, and other educational institutions.

From the above summary it will be seen that public servants of every class are to suffer heavy losses on their salaries. Among them are several classes of medical officers. Not only the whole-time medical officers of the Government services are affected, but both whole-time and part-time medical officers in the service of the National University and the local authorities. Thus, in addition to medical civil servants, medical professors and other teachers in the National University, county medical officers of health and their assistants, and poor-law medical officers are all affected. No case has been made, and no attempt has been made, to establish a case for imposing a special tax on civil servants or the officers of local authorities. They, in common with other citizens, share the privations due to the common depression. Their salaries have never been such as to permit them to make much provision for a rainy day. In particular, the whole-time medical officers, most of whom have recently been appointed, have been appointed at salaries which are much lower than those paid for similar duties in Great Britain. The poor-law medical officers suffer specially in another way. They have much travelling to do in the performance of their duties, but no special allowance is provided for travelling expenses. They have to pay their expenses out of their salaries. But, while travelling expenses of other classes of officers are immune from deduction under the Bill, the travelling expenses of poor-law medical officers, being classed as salary, are subject to deduction. None of the salaries paid to public servants in the Irish Free State have been generous, much less extravagant. The attraction to the public service has not been the remuneration, but the fancied security. This Bill takes away all security of contract as between Government and the members of the public services, and not only the public services but the public will suffer.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 25TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 15 (last week 23); scarlet fever, 1847; diphtheria, 775; enteric fever, 19; acute pneumonia (primary or influenzal), 1140 (last three weeks 1362, 1299, 1224); puerperal fever, 28; puerperal pyrexia, 116; cerebro-spinal fever, 52; acute poliomyelitis, 8; acute polio-encephalitis, 1; encephalitis lethargica, 8; dysentery, 12; ophthalmia neonatorum, 78. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 28th–29th was as follows: Small-pox, 51 under treatment, 1 under observation (last week 54 and 1 respectively); scarlet fever, 1645; diphtheria, 1596; enteric fever, 9; measles, 308; whooping-cough, 682; puerperal fever, 20 (plus 9 babies); encephalitis lethargica, 234; poliomyelitis, 1; "other diseases," 413. At St. Margaret's Hospital there were 8 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was 1 death from small-pox, 0 from enteric fever, 40 (1) from measles, 2 (1) from scarlet fever, 33 (12) from whooping-cough, 33 (7) from diphtheria, 41 (9) from diarrhœa and enteritis under two years, and 65 (16) from influenza. The figures in parentheses are those for London itself.

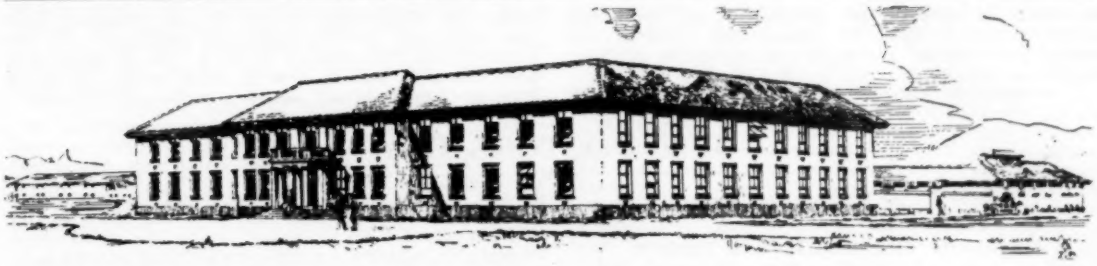
The death provisionally classified to small-pox was assigned to Poplar (Met. Boro.). No great town reported more than 4 deaths from influenza. Four deaths from measles occurred at Birkenhead, at Liverpool, and at Birmingham, each 3 at Burnley, West Bromwich, and Cardiff. West Ham reported 3 deaths from whooping-cough.

The number of stillbirths notified during the week was 301 (corresponding to a rate of 46 per 1000 total births), including 52 in London.

Death from Small-pox

The death provisionally classified to small-pox was that of a boy, aged 2 years, who died in Joyce Green Hospital. This child came from Poplar, and was, Dr. W. Allan Young tells us, infected by his father who was the first case in the house. When the child was first seen the rash was three to four days' old and although fretful he was not feverish and did not look ill. It was a typical mild case of variola minor. The mother, who is a notified case of tuberculosis, volunteered the information that the child had been subject to recurring attacks of bronchitis all his life. The certificate of death was filled in after post-mortem examination: I(a). Acute miliary tuberculosis. II. Small-pox. Unvaccinated.

AIR PAGEANTS FOR HOSPITALS.—The constitution of the British Hospitals Air Pageants Organisation has been amended. The new constitution provides that 10 per cent. of the gross gate and car park receipts in each place shall go to the hospitals, together with an advance block of £30 worth of tickets, 33⅓ per cent. of the programme receipts, and the entire profit from the sale of models and literature. After the deduction of 5 per cent. for management, the whole of the remaining proceeds is to be carried forward from year to year, and on the winding up of British Hospitals Air Pageants the accumulated fund will be handed over to the British Hospitals Association or their nominees, to be distributed as they think fit.



MEDICAL RESEARCH AT NAIROBI

(FROM A CORRESPONDENT)

THE Kenya Medical Department had the good fortune to get the estimates and plans of its medical research laboratory passed, and building operations actually begun, before the financial crisis put a stop to further developments in the colony. Though the laboratories have been in use for some time their formal opening, or at any rate their introduction to the notice of the public, took place in October last, when Sir Joseph Byrne, the Governor of Kenya, inaugurated the centenary celebration of the British Medical Association in which all the East African branches coöperated.

The idea underlying the scheme of the institute is that the problems presented by the more important diseases of East Africa can best be worked out by selected teams either chosen from the various government services or by specially qualified research workers from elsewhere. Ample space has, therefore, been allotted for the accommodation of workers who may have scholarships or fellowships which will allow them to live in Nairobi. Money which may be available for the investigation of any special problem may be utilised to the best advantage in the provision of personnel and equipment.

These more ambitious ideals are, of course, independent of the provision of facilities for carrying out the routine work required by the government and by private practitioners.

The laboratory is situated on the outskirts of Nairobi, on the Hill, at an elevation of about 5600 feet, 200 feet above the general level of the town. It is thus free from the dust and noise which were characteristic of the older very limited accommodation. The buildings face east-south-east and look out over an immense plain. They are constructed of brick.

The main block is in the form of the letter E. It has two floors but is only one room deep throughout. On each floor there is a verandah all round the inner side, and the doors open thereon. Each room is well lighted by large windows on two sides, and thus a maximum of illumination is provided for microscopical work, while there is ample space on the other walls for shelves and cupboards. On the ground floor, on the left of the entrance, is a small waiting room and the general offices. Then come the large library, the reading room, and the museum. At the end of the south wing are found the sterilising and media rooms of the bacteriological section. The government analyst has his rooms on the right of the entrance hall, and in the north wing is the biochemical department. On the first floor opposite the top of the main staircase are found the office and laboratory of the deputy director of laboratory services, and the office of the laboratory superintendent adjoins. Special accommodation is allotted in this block for malaria investigation, while the south wing is occupied by the pathological and bacteriological sections. The latter lies immediately over the sterilising and media rooms which are in communication by a lift. The medical entomologist occupies rooms on the north side of the first floor in front, and the north wing of the same floor houses the medical biologist, whose accommodation includes an animal room. At the back of the main block are the dark room and a microphotographic room and stores. The whole building is lighted by electricity and there are two complete Silverlite petrol plants for the provision of gas.

Separate from the main building are single-storey buildings, one of which is devoted to the production of calf lymph and antirabic vaccine, and attached to this are the calf-shed, the operating room, and accommodation for experimental animals. Up to 1919 calves were vaccinated and lymph collected under a tree in the old laboratory compound, and until the present building was erected this work was done in a temporary wood and iron shelter. It speaks well for the care with which the delicate operations were carried out in such surroundings that no single accident has occurred.

The African attendants are housed in a separate building of one storey. It may be noticed here that considerable time is taken with the training of dressers and laboratory attendants and some of these when sufficiently versed in technique are drafted to outlying hospitals.

As indicating the magnitude of the routine work done in the laboratory it may be mentioned that there is a yearly output of about half a million doses of calf lymph for vaccination against small-pox. In a similar period 2,000,000 doses of plague prophylactic have been issued, and the biochemical section has produced 80,000 doses of the bismuth preparation used in the treatment of yaws and syphilis. A large number of serological examinations and agglutinin reactions are made yearly, and stock vaccines for general use and autogenous ones for special cases are prepared. Some thousands of blood examinations are performed for malaria, &c.

Research work is continually going on and recently much attention has been paid to the various aspects of malaria, plague, dysentery, and trypanosomiasis. Among other items of interest may be noted the discovery of the tick vector of African typhus, and the special investigations made for the past two years into the structure of the cerebral cortex of the African. A visitor accustomed to the often cramped conditions under which the clinical investigator works at home is agreeably surprised by the spacious accommodation in the Nairobi laboratories. The absence of overcrowding, ample light, and a healthy atmosphere afford highly favourable conditions for work. Moreover, the concentration of these services in one institute enables the staff to avail themselves of mutual consultation and assistance.

The proximity of the African Hospital, from which most of the material is drawn, is an additional advantage. As soon as the finances of the Colony permit, the European Hospital will be replaced by an up-to-date building close to the laboratory, and the full scheme also provides a hospital for Asiatics, of whom there are many thousands in the Colony. When this combination of European, Asiatic, and African hospitals grouped round the central laboratory comes into being there will be unique conditions for the study not only of tropical diseases but of many other problems which await solution under exceptionally good circumstances.

It is not perhaps too much to hope that in the near future young research workers may be attracted from Europe to this centre. If such there be, it may be pointed out that besides the opportunities for work,

all kinds of exercise are available, and week-end holidays may be filled by fishing and other sports within easy reach. Living is not expensive and the climate is excellent.

The laboratory has been established and maintained under the directorship of Dr. W. H. Kauntze, who was appointed bacteriologist and pathologist to the East African Protectorate in 1919. Dr. Kauntze has now, however, left Kenya to take up the office of director of medical and sanitary services in Uganda.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XXII.—IN THE ROYAL AIR FORCE

SUNLIGHT flooding the mess room shows breakfast well advanced. Most of us have consumed porridge and fish and sausages, and reach with fading appetite for marmalade and toast. A few stragglers from early duty on the station saunter in and start the ball rolling again. Members of the territorial searchlight company, with us for a week of night flying and spotting, mix cheerily with the regular members. Conversation is general, for the majority are youths fresh from the flying training schools, and have not yet reached the stage in a service career when conversation at breakfast and high treason share equal rank as offences "punishable by death or such. . . ." A junior territorial officer expresses loudly his desire to have a flight in the *Hinaidi*, the big bombing machine attached for night exercises. It is no concern of his how air sick were certain of his colleagues the night before, for has he not crossed the channel six times in rough seas with never a suggestion . . . ? "Does he know he must sign a blood chit?" "What's that?" "Oh! simply a form to say it's his own fault if he spins into the ground." "Certainly he will sign the thing. Machines don't crash these days."

SICK PARADE

Then someone asks me how fares his friend, a flight commander, operated on a few days ago for appendicitis at the general hospital, and will I fly over with him for more recent news after lunch? Yes, I will, if no machines are up while we are away, as my assistant is having the afternoon off and I am on duty for dusk and night flying. I rise, pass from the mess across the compound to sick quarters and to the matter of sick parade. It is 8.30 A.M. A mild measles epidemic has added one or two lesser complications to the situation, particularly as so many airmen seem never to have had the disease. My assistant is handed the duty of inspection parades and isolations. He is also allotted care of families and elementary child welfare lectures because of a confessed leaning to pædiatrics. All the better. At sick parades one is rarely faced with emergency. The seriously ill man may drop off duty at any hour, after a stolid endeavour to carry on. Pneumonia, appendicitis, spreading cellulitis, acute influenza—they more often come in during the morning break. I see an acute tonsillitis, and, thoughtful of diphtheria, take a swab. The swab can go over with me by air this afternoon to save time, as the general hospital and the central laboratory are on the same station. Next comes an airman with a damaged internal cartilage. His medical documents show that this is his third attack of knee trouble. I arrange his admission to the hospital. The next case presents a problem more or less confined to the Air Force. A sergeant pilot comes forward with a history from his flight commander of rather indifferent landings becoming progressively worse. The sergeant pilot states that he is doubtful quite where the ground is in the last few feet of descent, he usually flattens out too soon, and tends to stall. Now the "last few feet" with a machine that must for proper safety be landed at 65–75 miles an hour is a matter of no small importance. I consult his medical documents from his history envelope, and pay particular attention to his eye condition when up at the central medical board in London for his fitness-for-flying examination. Vision is normal, I find, but a certain ocular muscle weakness is suggested. He was passed "borderline eyes." I repeat some of the tests and find him worse than he was then. I take him off flying temporarily, and arrange for an examination by the ophthalmic consultant, telling the sergeant pilot that he may have to undergo a course of eye training, after which he will be fit again for full flying duties.

WARD ROUNDS

It is now time to do ward rounds. The modern station sick quarters are like little cottage hospitals. The design and equipment are excellent. There are two small wards and an isolation room, a waiting room, consulting room, treatment room, and dispensary. There is a useful operating theatre so placed that the crash ambulance can be brought to within a corridor width of it, with ample stretcher space—a point of great importance for cases of severe injury requiring immediate help. The ambulance in daytime waits at the sick quarters, fully equipped not only with all first-aid materials, but also with hacksaws, pliers, asbestos gloves, and so forth, for breaking quickly through wreckage. In the case of mishap in the air, the alarm bell rings and the telephone gives one details of position.

After rounds the morning correspondence is examined and answered, and then an inoculation party is paraded for their T.A.B.C. vaccine as a preliminary to going overseas. By this time my colleague is back with the results of his work, and I send him to do sanitary rounds so that he can be clear for the afternoon. As I prepare to leave sick quarters to report to the officer commanding, one of the flying officers confronts me nervously in the passage: "I wonder, sir, could I . . . ." "You certainly could—come in." "Well, sir, I'm not feeling quite fit. I'm a little worried in the air. Looks like 'wind up,' but it's not really. I'm just, somehow, always listening to the engine and the flying wires on turns . . ." "Go on." "And I think I ought to say something before they spot it in the flight." "So do I." "It's not really funk." No, I know that; it's the feeling that comes on slowly, unaccountably at times, with many fast scout pilots; the feeling that something is going to snap somewhere, and of always waiting and waiting, till the will snaps first. He continues: "It's worse, of course, night flying. I've tried to make myself fly through it, so to speak, but now I hate walking out on the tarmac." "How much leave have you had?" "Fourteen days, so far." "I see. Probably another 14 will put things right. Take it, and make it a complete change. I leave that to you. I'll drop the hint to the C.O. Let's see you as soon as you are back—and don't worry."

When he has gone I run through the contents of his medical history envelope. He has had two slight crashes—undercarriage damaged in one, and lower plane written off in another. No loss of consciousness, no injuries. The crashes happened in pretty quick succession five months ago. His annual medical examinations are up to the average, with the exception of a tendency to brisk knee-jerks and eyelid tremors in a rather marked degree. Nothing in his eyes to suggest a reason for his two crashes. A firm but human commanding officer can help these borderline cases to a considerable extent. Sometimes they have to be put up for a medical board; at others, they recover with a spell of leave and a sympathetic gesture. The medical officer has to use his judgment. The pilot who has taxed his nervous control too far because of an inherent distaste for expressing his feelings and getting it off his chest may never regain his confidence in the air. This has happened to pilots

of the most widely divergent temperaments. It is part of the duty of a station medical officer to know his flying officers, to obtain their confidence, to fly with them or, better still, to have passed out as a pilot himself.

I go across the camp to the C.O.'s office to give him a synopsis of those medical matters that may interest him, and particularly to discuss the case of my friend the flying officer who has just left me. Then I wander on to the tarmac and watch the machines homing from their morning exercises. It is lunch time. As I turn to make my way to the mess I am presented with my copy of night flying orders. After lunch, as arranged, my pilot and I clamber into our machine and are soon tearing into wind over the surface of the aerodrome, with the grass blades fading away as the machine takes lift. Fields, reservoirs, spinneys, roads, railways, villages appear ahead, show below, and drift into hazy distance. Then with the appearance of our landing ground the throttle is drawn back, the roar from the exhaust dies, and in a graceful turn and glide we slip to earth. While I make for the central laboratory, armed with the throat swab and the necessary form, my companion goes to inquire about his flight commander. We meet in an hour, and tea time finds us once more in our own mess. A game of tennis, a bath and rub down, and life feels worth the living. As dusk approaches I walk over to the aerodrome and watch the T-shaped flare path being placed in position and see that the ambulance has taken up station nearby. The flares are constructed of wire, shaped like beehives, over which crude oil is sprinkled and kept burning by means of a constant dripper.

NIGHT FLYING

The first machines take off in true daylight. They are piloted by the junior officers under instruction, who are getting accustomed to landing by the flare path with still enough natural light to make approaches simple. They have also to learn the art of morsing clearly their particular identification signs and their "want to land" calls, which are flashed by electric light under the machine, and to accept the "all clear for landing" signals, which are under the supervision of the flare-path duty officer. Later, as darkness comes on, the flares become the essential indicators by which approaches are judged. Standing near the tail of the T, I watch a machine signal as it turns and straightens out to land. A rush of wind, a slight jar on impact, the scrape of tail skid, accentuated strongly at night, and all is well. The machine taxis up for a second venture, and is away again into the ill-defined sky. A second machine approaches landing fast—too fast. This night flying gives one a feeling of continual discomfort; but it is all part of the game. We watch this next endeavour with misgiving. The pilot is overshooting badly. The instant question is will he put on engine again or risk it? We are greeted by a renewed burst of flame from the exhaust. He is going to make another attempt. Towards the flares he dips a second time—still too high. The machine charges down the path, strikes the ground, and races forward. We watch the diminishing space between the machine and the distant hedge. A second's tension. A sudden burst of engine again without the necessary initial run, a stagger, and then the noise of impact. The ambulance speeds towards the wreckage.

In sick quarters the pilot protests he is "all right, doctor"—protests in just such a way that we know he is badly shaken and has probably been a little concussed. He is flushed, excited, and restless. A cut across his nose needs dressing. No bones broken. In a short time he is in bed under observation in his own room at his special request. It is pointless to force orders that don't really matter on pilots fresh from a nasty accident. A little tactful give-and-take makes all the difference to the night's rest, which is bound to be fitful in any case.

On the aerodrome in the full darkness the searchlight company are hunting the skies for the approaching bomber. They catch her in the cross beam of two distinct lights, and follow her endeavours at evasion with obvious triumph. The exercises for this night are over, and the *Hinaidi* sweeps in gracefully and stops comfortably beside the end flare, when with a demonstration of finality from her engines she makes for the hangar. The door in the fusilage opens and out totters an exceedingly sick young officer. The enthusiasm, the confidence in mind over body, are gone. I tactfully suggest a stiff brandy and ginger ale. We sit a few moments in the mess. Presently he says, "Funny, that, because I never was sick crossing the channel." "Never mind," I reply, "I'm worse than you. I'm usually rotten in both." Comforted from mutual feeling, the officer braces his shoulders and makes for bed.

I go to have one last glance at my patient from the night flight. The time is one minute into the new day.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

H. J. Bennett and V. D. Wyborn to be Surg. Lts.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. A. W. Kendall to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS

Lt. C. W. A. Kimbell relinquishes his temp. commn.

TERRITORIAL ARMY

Maj. A. J. Gibson to be Lt.-Col.

Capt. G. B. Tait resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE

Flying Officer V. H. Tompkins is granted a permanent commission in this rank.

Flying Officer F. W. P. Dixon is promoted to the rank of Flight Lt.

RESERVE OF OFFICERS

Flight Lt. E. G. Howell is transferred from Class D (ii) to Class D (i).

ROYAL NAVY MEDICAL CLUB

The annual dinner will take place at the Trocadero Restaurant, on Wednesday, April 19th, at 8 P.M. General meeting will be held at 7.30 P.M. Further information can be obtained from the hon. secretary, Surgeon-Commander R. J. G. Parnell, R.N., Medical Department, Admiralty, S.W. Lord Stanley, M.P., and Surgeon-Captain R. J. Wilan, K.H.S., R.N.V.R., will be the club guests.

COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS

The War Office announces in our advertisement columns that 25 permanent commissions in the Royal Army Medical Corps are being offered to qualified medical practitioners, under 28 years of age, registered under the Medical Acts. There will be no entrance examination, but candidates will be required to present themselves in London for interview and medical examination on April 28th, 1933. Applications should reach the War Office not later than April 21st, 1933. All information as to conditions of service and emoluments may be obtained either by letter or in person from the Assistant Director-General, Army Medical Services, the War Office, Whitehall, London, S.W.1.

DEATHS IN THE SERVICES

Surgeon-General Percy Hugh Benson, I.M.S., retd., who died at his home in Jersey on April 2nd at the age of 81, was the son of Lieut.-General R. Benson, of the India Staff Corps. Receiving his early education at Shrewsbury School, he afterwards entered as a medical student at St. Thomas's Hospital, where he won the Treasurer's Prize for senior practical anatomy, and in the same year, 1871, became prosector at the Royal College of Surgeons of England. Two years later he qualified with the M.R.C.S. and graduated, with honours, M.B., C.M. at Aberdeen. In 1874 he passed fourth into the Indian Medical Service and was specially mentioned by the professors at the Army Medical School at Netley. He was then drafted to India and in 1875 was appointed to the medical charge of the camp of the Prince of Wales (afterwards King Edward VII.) when H.R.H. made a tour of India. In 1876–77 he did useful service in fighting the great famine which devastated

Southern India at that time and for his services received the special thanks of the Chief Commissioner of Mysore. Subsequently he was appointed civil surgeon and superintendent of the jail at Mysore and medical officer to the Maharaja. In 1903 he became Inspector-General of Hospitals in Burma, in the next year principal medical officer of the Province, and in 1908 he became surgeon with the Government of Madras, in which capacity he was a member of the Legislature. He was also hon. surgeon to the Viceroy of India and retired in 1911 after having completed 37 years' service in India. He was awarded a good service pension in 1909. In the late war he volunteered for service on the western front and was mentioned in despatches. He was twice married, first to Mary Eden Walker in 1874, and secondly to Katherine A. Simpson in 1896. He leaves two sons and four daughters.

PANEL AND CONTRACT PRACTICE

The L.C.C. and Consulting Practice

A PANEL PRACTITIONER writes: "By far the most important medical topic at the present time is the scheme introduced by the London County Council for consultant practitioners in the hospitals under its authority. It is not often realised that senior consultant practitioners ever undertake medical work under contract, but such is certainly the case in connexion with the London County Council hospitals, who come under the control of the public health committee of the Council.

"A scheme has been passed without any opportunity being given to the consultants of discussing its details before they were adopted by the Council; the consultants are now expected to apply for posts under its terms in their special departments. There would appear to be no recognition whatever of seniority or past services. It is practically said 'here are the terms,' take them or leave them, and we may be able to talk about them in the autumn. We can and do confidently expect men in the high position of consultants to big teaching hospitals to have the necessary stamina to refuse such treatment. They have the position in their hands if they will only hold together; and it would be quite a good suggestion for practitioners in general practice not to send any patients privately to those consultants who are sufficiently weak-minded as not to hold together to refuse service under the scheme. As I understand the controversy, the financial aspect is not the most important one, but the way in which the profession in general has been treated by the Council. The Government through the Ministry of Health would never have treated a professional body in this way, and in fact are always willing to discuss difficulties which arise in any department of medicine. If suitable action is taken by all concerned, the general practitioner can help very markedly to prevent such a course of action taking place again."

Age and Infirmity

At the March meeting of the Insurance Acts Committee it was reported that one application for assistance towards retirement by an aged and infirm practitioner had been received by the National Defence Trust under the scheme. It will be remembered that the last annual panel conference agreed to use trust money to help such retirement only in the sense of promoting efficiency in the service. Would-be applicants must not simply be in need of charity, there must have been complaints of inefficiency arising out of old age and infirmity, so that it would benefit the service to enable the doctor to retire by making him a grant rather than run the risk of carrying on with more complaints and more dissatisfaction with the medical benefit provided under the Act. This application did not apparently fulfil these conditions.

Regulations

There are about forty points pending for discussion with the Ministry on regulations which it is suggested need alterations, the first being a relic of the expression of opinion of several panel conferences that practitioners should be relieved of the necessity of recording attendances and visits in their record cards. The work involved in keeping these records is small and statistically valuable; even financially it would be worth while for the insurance practitioner to continue to do this sort of work, for its omission would certainly be used as an argument for reduction in the capitation fee. Alteration in the regulations for charging fees to insured persons is to be reopened; it is suggested that the time for sending in G.P.45 forms should be extended from two to seven days, bringing it into conformity with many other forms. An important announcement made at the same meeting of the Insurance Acts Committee was to the effect that it would soon be possible to prescribe appliances ". . . when required for the proper administering of any drug forming part of medical benefit" on the ordinary prescription form without surcharge; in other words, a general definition of appliances rather than a special one is to be introduced. At the present time eye droppers are on the schedule, but ear droppers are not. This alteration, when it comes into force, will save much ambiguity and avoid insurance doctors being surcharged on a mere technicality.

Premature Publication

The London Insurance Committee still refuses to omit reports of medical service subcommittee cases from its public agenda until the full committee have considered such reports. It was stated that recently a London evening paper had published details of such a case before the full committee had even met to consider it. That publication may bias members of the committee who have to adjudicate on the report is very probable, but it must be remembered that this is the usual procedure in disciplinary cases with public bodies like the L.C.C. The matter is therefore not quite so simple as would appear at first sight, and it is doubtful if the Ministry would, even if they could, issue instructions to an insurance committee how to draw up its agenda paper. The medical members of an insurance committee should try to educate the other members in the desirability of an alteration in procedure.

WRONG USE OF HOSPITALS.—The board of directors of Aberdeen Royal Infirmary have satisfied themselves that the hospital is being used to a considerable extent by persons who are not "proper recipients" of the charitable services it provides. They have therefore issued a circular to members of the medical profession pointing out that the financial status of many of the patients is such as to enable them to pay for private treatment. The great increase in both in-patients and out-patients in recent years "demands that effective action should be taken that only such cases as the infirmary is intended to treat should present themselves for advice and treatment," and medical practitioners are asked to assist. In future all patients, other than accident or emergency cases, must present a formal request from their medical attendant to the appropriate department of the hospital for advice regarding the diagnosis and treatment of the case, with the added clause, "retaining him or her for in-patient treatment should you consider this necessary."—A similar difficulty at the Weymouth Eye Infirmary has led to the recommendation that patients should be asked to pay according to their means.

CORRESPONDENCE

PART-TIME CONSULTANT AND SPECIALIST SERVICE OF THE L.C.C.

To the Editor of THE LANCET

SIR,—As more senior men who have no direct interest in the part-time consultant service of the L.C.C., we should like to draw the attention of our colleagues to what appears to us to be the significance of the London County Council's recent action in connexion with the appointment of part-time consultants and specialists to the Council's hospitals. We are not concerned here with the justice or injustice of the actual terms of appointment. To us the disturbing feature of the London County Council's action has been its unwillingness to coöperate in free and open discussion with the consultants, so that a competent and well-organised consultant service should be at the disposal of the ratepayers of London. It is surely to the advantage of the London County Council that such coöperation and consultation as have been offered to it by the consultants should be exploited to the full. How could it be otherwise? A service of highly skilled technicians cannot be properly organised unless the organising body has the benefit of the experience of the technicians concerned.

The particular point in question is no mere local incident of only contemporary importance. We see in it that element of despotism which in these days takes shelter behind the name of democracy, but which is essentially anti-democratic. Times are changing rapidly, and the closest coöperation of all men of goodwill in the hospital field is essential if the difficult problems of the future are to be solved. No authority can afford to neglect any contribution of value. The consultant section of the profession is equipped in a peculiar way to give valuable advice on the organisation of the consultant service. Powerful bodies are not unnaturally jealous of their rights, but the London County Council, if it lost a little in absolute power, would gain a great deal in knowledge and real power if it exhibited a warmer desire for coöperation with voluntary hospitals and with the men and women who staff them.

We are, Sir, yours faithfully,

CHARLTON BRISCOE, E. FARQUHAR BUZZARD, CRISP ENGLISH, STCLAIR THOMSON, JOHN S. FAIRBAIRN, FRANCIS MUECKE, A. JAMES WALTON.

April 4th, 1933.

To the Editor of THE LANCET

SIR,—The following chronological statement in connexion with the Council's scheme for the appointment of consultants and specialists to the Council's hospital service will be of interest.

(1) The medical officer of health appointed a departmental committee of his own staff to consider and make recommendations to him as to the best method of obtaining consultants and specialists for the Council's hospital service. This committee consisted of the following members: (*a*) *Principal medical officers attached to the central administrative medical staff:* Dr. Daley, Dr. Brander, Dr. Brincker. (*b*) *Medical superintendents (general hospitals):* Dr. Harkness, St. Olave's Hospital; Dr. Masterman, St. Giles' Hospital; Dr. Sandiland, St. Stephen's Hospital. (*c*) *Medical superintendents (special hospitals):* Dr. Pugh, Queen Mary's Hospital, Carshalton; Dr. Thomson, North-Eastern Fever Hospital; Dr. Watt, King George V. Sanatorium, Godalming. The committee held a large number of meetings and took a great deal of evidence from those who were considered most suitable to assist them in drafting their report. The report, which was unanimous, was presented to the Council's medical officer of health on July 22nd, 1931.

(2) Owing to the economic crisis in September, 1931, and the necessity at that date and for some months afterwards for concentration upon various matters of urgent importance in connexion with the Council's hospital service generally, it was impossible for the medical officer of health to consider this report in detail until the autumn of 1932.

(3) Consultations and correspondence took place about this date with the Council's solicitor concerning the position of the consultant and specialist staff who were at that date members of the Council's hospital staff and in the main were also in the service of the late Metropolitan Asylums Board and the Boards of Guardians. On the advice of the Council's solicitor the Council decided on Dec. 8th, 1932, that notice of termination of their appointments on March 31st, 1933, should be sent to every consultant and specialist in the Council's hospital service, under the direction of the central public health committee, but that they should be informed in the same letter that they would be eligible for appointment under the new scheme if they decided to become applicants. Subsequently these appointments were extended until June 30th, 1933.

(4) During the Christmas recess, 1932–33, the medical officer of health gave careful consideration to the scheme which he proposed to submit to the Council for the appointment of consultants and specialists.

(5) Towards the close of the Christmas recess two reports were drafted: (*a*) one dealing with general principles, the substance of which was communicated to Dr. Anderson, the medical secretary of the British Medical Association; and (*b*) a detailed scheme in the form required by the Council.

(6) On Jan. 20th, 1933, the medical officer of health received a request on the telephone from Dr. Anderson for an interview on the subject of the scheme which it was understood he was shortly to submit to the central public health committee. The medical officer of health responded at once by inviting Dr. Anderson to come and see him, which he did on that date. The medical officer of health gave Dr. Anderson such information as it was in his power to convey to him at that date. It was clearly impossible for him to supply Dr. Anderson with the details of a report which had not yet been submitted to the committee of the Council concerned.

(7) On Feb. 9th the medical officer of health received a telephone message from Dr. Anderson asking him to see representatives of a consultants' committee which had been set up apparently by those consultants and specialists who were members of the staff of the Council's hospital service. The medical officer of health agreed to receive a deputation but asked for a memorandum setting out their views on the best method of providing consultant and specialist services for the Council's hospital service.

(8) The memoranda [1] (2) drawn up by the consultants' committee were forwarded to the medical officer of health by Dr. Anderson, and on Feb. 13th a meeting took place at the County Hall.

[1] The memoranda under discussion at this meeting were published in the supplement to the *British Medical Journal* on March 25th and were summarised in *The Lancet* of the same date.

Full notes of the proceedings were taken by Dr. Daley, one of the Council's principal medical officers.

(9) As will be seen from these notes (herewith enclosed) the following were the main points on which discussion took place :—

(*a*) *Method of selection of consultants.*—The medical officer of health pointed out that "The Council's medical officer must be the person to advise the Council on the suitability of applicants and that he was authorised to confer with anyone he thought proper."

(*b*) *Provision for work being done during holidays.*—The medical officer of health stated that it was not expected that consultants would have to pay a locum but that the consultants would arrange during the holiday period to do each other's work.

(*c*) *Length of session.*—Dr. Anderson suggested "a normal session consists of two hours." The medical officer of health suggested "a session should be from two to two and a half hours," or alternatively, "a session is approximately two and a half hours."

(*d*) *Committee of consultants for purposes of consultation on administrative arrangements.*—Dr. O'Donovan asked Sir Frederick to keep in touch with the committee of consultants, at all events during the experimental period of the first year or two. Sir Frederick said he would appreciate the advice of a consultative committee though he did not bind himself to consult a committee of any particular personnel.

At the conclusion of this meeting, therefore, the position was :—

A. The views of the consultants had been received in writing and they had been amplified by deputation.

B. On the general framework of the scheme—e.g., grouping of hospitals, payment by annual salary, &c.—there was full agreement.

C. All the points raised by the deputation were subsequently most carefully considered by the medical officer of health prior to the submission of his report to the central public health committee on Feb. 23rd.

The report of the medical officer of health, with certain modifications, was passed by the central public health committee on that date, by the finance committee of the Council on March 1st, and by the Council itself on March 7th.

(10) The posts were advertised in the *British Medical Journal* and *The Lancet* on March 10th, 17th, and 24th. Before the appearance of the first advertisement the medical officer of health wrote to Dr. Anderson and to the Editor of *The Lancet* asking them to be good enough to draw attention to the advertisements in their respective journals on the date of the first issue of the advertisement—viz., March 10th. Dr. Hill, assistant medical secretary, British Medical Association, telephoned to the medical officer of health, in response to his letter, stating that Dr. Anderson much regretted that he was unable to deal with the matter himself as he was going on that day to Newcastle-on-Tyne, but that he had asked his colleague, Dr. Hill, to do anything he could to carry out the wishes of the medical officer of health. Dr. Hill subsequently telephoned to the medical officer of health and stated that he had only two comments to make on the Council's scheme, viz.: (*a*) on the insufficiency of the fee for anæsthetists; and (*b*) on the duration of a session. The medical officer of health told him that he saw no reason at all why he should not make any comments he thought proper on these points, but that it would be impossible to alter the proposals of the Council's scheme at this stage and that as the scheme was for an experimental period of one year these and other matters would no doubt be carefully considered by the Council before the end of the year 1933, and any modifications that it was thought desirable to make would be made then in the light of the experience gained.

(11) The following paragraph appeared in the *British Medical Journal* on March 10th, and it will probably be agreed that anyone who read these comments will find it somewhat difficult to justify the subsequent conduct of Dr. O'Donovan and the medical secretary of the British Medical Association in connexion with the meetings which took place on March 21st and 28th at B.M.A. House :

"*Part-time Consultant and Specialist Service of the L.C.C.*—At its meeting on March 7th the London County Council approved the Central Public Health Committee's proposals for a reorganised consultant and specialist service for its general hospitals. At the beginning of the year the present consultants and specialists were given three months' notice to terminate their appointments, and the new scheme is intended to replace the many and varied arrangements that were inherited by the London County Council from the boards of guardians. A general meeting of the consultants and specialists affected was held under the auspices of the British Medical Association, and a representative committee prepared a memorandum embodying the consultants' views, which was sent to the County Hall authorities. In general, the London County Council's plan conforms to the principles set forth in that memorandum. The Council's general hospitals will in future be divided into seven groups, according to geographical position, and consultants will be appointed to the service as a whole and attached to a group or groups of hospitals. As far as practicable the residential schools and institutions under the Education and Public Assistance Committees and the special hospitals situated within the group will be served by the consultants attached to it. The team of consultants attached to a group and available at the hospitals within it will consist of: physician; surgeon; gynæcologist; ophthalmic surgeon; ear, nose and throat surgeon; orthopædic surgeon; dermatologist; pædiatrist; urologist; radiologist (except at Lambeth Hospital); obstetrician (where there is a maternity ward); and tuberculosis officer (in appropriate circumstances). These consultants and specialists will be engaged, except in the case of anæsthetists and neurologists, at annual salaries on a sessional basis, and it is contemplated that the minimum period for which a consultant or specialist will normally be appointed will be two sessions a week. The scale of remuneration approximates to the Association's scale, except in the case of the anæsthetist. Representations on this and other matters will doubtless be made to the Council by the Consultants' Special Committee. There is also provision in the Council's plan for salaries and conditions of appointment of full-time consultant physicians and surgeons, although there is at present no indication that appointments of this nature will be made. In the advertisement columns of this week's *British Medical Journal* a wide range of consultant and specialist appointments to the L.C.C. service is offered. The Council's scheme is an experimental one, and it is recognised that it may be necessary as a result of experience to introduce modifications of policy and administration; for this reason appointments are to be made on an annual basis. This decision of the L.C.C. is yet another indication of its intention to put its hospital service on a really sound foundation.

It is surely well worthy of note that from the date of the meeting of consultants with the Council's medical officer of health on Feb. 13th until at least a week after the appearance of the first advertisements in the medical press on March 10th, no suggestion had been conveyed to the medical officer of health or to the central public health committee of the L.C.C. that there was any dissatisfaction with the proposals set out in the scheme passed by the Council on March 7th, nor was any request received, either from the so-called consultants' committee or anyone else, for a deputation to be received by the central public health committee up to the date when the scheme was published and passed by the Council on March 7th.

FREDERICK MENZIES,
April 3rd, 1933. Medical Officer of Health, L.C.C.

*** We have received from the Medical Secretary of the British Medical Association, too late for publication in full, his comments on a letter in similar terms which Sir Frederick Menzies has addressed to the Editor of the *British Medical Journal*. Dr. Anderson writes: "The chief medical officer of the L.C.C., in his careful chronological recital of events, has omitted to mention the one event which compelled

the consultants to adopt the attitude they have since persisted in. Immediately after the consultants' committee meeting held three days after the L.C.C. had made its proposals public the medical secretary of the B.M.A. asked the chief medical officer to discuss the various objections raised by the consultants to certain features in these proposals. The chief medical officer replied that discussion would serve no purpose, as the L.C.C. had now passed the scheme. It is necessary to emphasise that no discussion could have taken place *before* publication of this scheme as the details of it had been withheld from the consultants when they met Sir Frederick Menzies at County Hall. The decision to resist the L.C.C.'s scheme dates from this incident."

Dr. Anderson sums up as follows:—

"1. From the beginning of January until the meeting on March 20th the friendliest coöperation was repeatedly offered to the medical officer of health.

"2. The detailed proposals of the L.C.C. were never discussed with the consultants—despite the opportunity offered to Sir Frederick Menzies at the County Hall meeting. The first inkling of the terms and conditions of service was received one day before it was finally approved.

"3. The consultants' memorandum was discussed and the majority of its detailed proposals ignored.

"Finally, even at this late stage, it cannot be too emphatically stated that the consultants and specialists are still anxious to coöperate with the L.C.C. in order to secure an efficient and harmoniously working service. May I express the hope that the L.C.C., either of itself or through its chief medical officer, will respond to this offer?"

CONTROL OF INFECTIONS IN CHILDREN'S WARDS

To the Editor of THE LANCET

SIR,—I have followed with much interest your leading article of Feb. 18th and the ensuing correspondence on this subject. I agree that the risk in most children's hospitals is very great, and I think it tragic that (to quote Dr. Donald Paterson's words) "the staffs of children's hospitals live in continual dread of convalescent infants contracting some fresh infection." But is it necessary or advisable, especially when economy must be studied, to build hospitals with two- and three-bedded wards? In my opinion it is laying emphasis in the wrong direction. I think the "wardlet" nursed by one nurse is not only unnecessary and extravagant, but less efficient than the larger ward—and I claim to speak with experience in both municipal and voluntary hospitals.

Both efficiency and economy in effort are better served by well-planned well-ventilated wards of 10 to 20 beds, with two or three subsidiary two- or three-bedded wards to each unit. The wards should be on the sanatorium plan, with sliding doors and windows facing south and west, and with through ventilation. They should be adequately heated, but never overheated. The main stress however should be laid on the precise technique of good and healthy nurses. The physician in charge should take as much trouble in ascertaining that all details are correctly arranged and scrupulously carried out, as the surgeon in his theatre. With larger wards a common milk-room or diet kitchen ensures the preparation of the food by nurses not at that time engaged in the ward, but receiving a valuable training in one branch of their work. Arrangements for bathing and changing can be made in lavatories arranged for groups of infants where facilities for disposing of diapers and properly safeguarding the hands of the nurse are provided.

The main stress must be laid on the training of the nurses and the provision of a sufficient number of them for adequate nursing. They will nurse better in groups, each with reasonable time off for food and refreshment, rather than isolated in cubicles where the partitions give a false air of security. No nurse can nurse a sick child night and day, and no nurse should be expected to sleep with a sick child in hospital. All nurses are not of an equal capacity, and better service is given in a ward under the supervision of a good sister. If one nurse is in charge of one or two cubicles, a visiting nurse must tend the child or children during her absence off duty, and you are where you were as regards the spread of infection if the technique of the substitute is not good, or if her tendency to catarrh is a source of infection. This tendency of the young nurse to spread infection calls for careful attention from matron and sister. A total staff, including matron, sisters, night and day and relief nurses, of one to every two infants is advisable for good work in infants' wards, and this number should be adequate.

When we started the babies' hospital in this town we were warned of the dangers of infection and hospitalisation. Our records show that scrupulous care, fresh air, sunlight, and careful technique obviate the necessity of single wards. In each unit one or two small rooms for observation and temporary isolation are advisable, but I deprecate as harmful unnecessary isolation. From the point of view of both babies and nurses too much isolation is bad. How often does one experience the harmful effect on the child of solitude for a few days and the beneficial effect of a return to the community. Infants as a rule are not disturbed by the noise and activity of the open ward.

I feel there is a danger that the essentials of protection in nursing hygiene be neglected whilst glass and wooden barriers against infection are erected. The former are, in my opinion, adequate when used with intelligence.

I am, Sir, yours faithfully,

Manchester, April 3rd, 1933. CATHERINE CHISHOLM.

PLEURAL EPILEPSY OR AIR EMBOLISM

To the Editor of THE LANCET

SIR,—I have to thank Sir J. Purves-Stewart for his comments on the case submitted as air embolism. May I however suggest, with all respect, that an important point—strongly indicated in the context—was overlooked by him, namely, that lung puncture must have occurred, from which air entered not the systemic but the pulmonary venous system. This was the belief of the very experienced operator, and publication was intended to show how such an accident can occur through a free alveolar swing closely corresponding to a previous pleural reading. In its localising signs and cutaneous appearances the case differed markedly from the syncopal, convulsive, or paralytic types of pleural shock, fairly commonly observed in pneumothorax therapy, some of which certain writers consider more correctly classed as embolic.

A full pathogenesis of air embolism is given by Schlaepfer (Johns Hopkins Hospital Bulletin, 1922) with reasons for its comparative rarity considering the relatively common accident of lung puncture. Regarding Cordier's theories of pleural epilepsy and pleural eclampsia, the experiments of Wever, Croizer, and others have apparently failed to confirm his findings.—I am, Sir, yours faithfully,

V. R. WALKER, M.B., D.P.H.

Cheshire Joint Sanatorium, Market Drayton,
April 3rd, 1933.

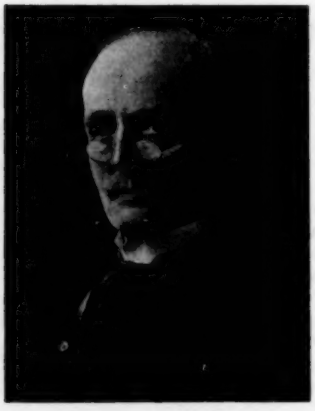
OBITUARY

DAVID SAMUEL DAVIES, M.D. Lond., D.P.H.

LATE MEDICAL OFFICER OF HEALTH FOR BRISTOL

WE regret to record the death of Dr. D. S. Davies, which occurred on March 26th at his house, Beaconstow, Exmouth, at the age of 79. He had lately retired from the position of medical officer of health of Bristol city and port, in which capacity he was known to the whole medical profession as a leading sanitarian.

The son of the late Dr. David Davies, the first medical officer of health of Bristol, David Samuel Davies was born at Bristol in 1855 and educated there and at St. Thomas's Hospital. He qualified in 1879 as M.R.C.S. Eng. and graduated in medicine at the University of London in 1881. He took the diploma of D.P.H. Camb. in the following year, and early became engaged in important sanitary work on his appointment as a medical inspector under the Local Government Board. A general sanitary survey of the country was at that time being directed especially to the risks of the introduction of cholera at British ports. During the three years from 1882 to 1885 the country was rightly apprehensive of the threatening aspect of Asiatic cholera, and no clear guidance was being received from the medical profession in spite of many careful and recorded observations from those who had encountered the disease in former epidemics in this country and abroad. The Local Government Board took the wise step of substituting for a tightening of quarantine restrictions a minute and rigid inspection of all suspected ships and passengers approaching British coasts. At the same time a general endeavour was made to bring the districts that would be specially exposed to the introduction of the disease up to a high state of sanitation, thus precluding footholds for the disease.



DR. D. S. DAVIES

With the experience of having collaborated in this work Davies, in 1886, succeeded his father as medical officer of health for the urban district and port of Bristol, a post which the father had then held for 20 years, and during the succeeding years the son proved himself not only an admirable executive officer but a vigorous pioneer in many directions of health work. He found great opportunities at Bristol for organisation of an anxious sort, for he had several outbreaks of small-pox to deal with, more than one of a serious character, and both typhoid fever and diphtheria visited the city in epidemic form at intervals in the period. He recorded his experiences in the Bristol health reports, in the Transactions of the Royal Medical and Chirurgical Society and those of the Royal Society of Medicine, in the *Journal of Hygiene*, and in *The Lancet*, and his writings on typhoid carriers, on milk-borne scarlet fever, on the treatment of diphtheria, and on ship-borne rats as vehicles of plague infection were sound contributions to medical knowledge. During his tenure of office in Bristol he saw the population of the city increase by over 150,000, while its area multiplied fourfold. He kept abreast with his increasing responsibilities, finding time to discharge the local demands upon him and to participate importantly with the general advances in public health knowledge.

His connexion with the University of Bristol was a close one. He was lecturer on hygiene in the medical school and examiner in the subject in the University, while his services as examiner were also called for by the Universities of London, Wales, and Belfast, and by the English Conjoint Board. He was a member of the Trevethin Committee, constituted in 1922, to report upon the best measures for preventing venereal disease in the civil community. The committee, a group of well-known authorities on the subject from many angles, sat for a long period, examined orally a large number of witnesses, and came to conclusions which have since been found of high practical value, being reflected in alterations of the law and in an increase in the number and efficiency of venereal diseases clinics. Other public positions which Davies filled were the presidencies of the Bristol Medico-Chirurgical Society and of the local branch of the B.M.A., while in 1906 he was president of the Incorporated Society of Medical Officers of Health. In 1912 the University of Bristol gave him the degree of LL.D. He held the volunteer decoration as Lieut.-Colonel R.A.M.C.(T.).

Dr. J. Middleton Martin writes: "As a colleague of the late Dr. D. S. Davies, being medical officer of health for an adjoining area, I had the privilege of association with him for well over a quarter of a century. My earliest recollections of him were the occasions of the meetings of medical officers of health in the west; his reception of the young members well exemplified his kindness of heart—however humble the contribution, never was man more encouraging than Dr. Davies in the way he picked out any good points in the address and encouraged the junior to further efforts. During our long association he took pleasure in keeping me in touch with his work and special experiences—in the very early days of the century when he started a small laboratory in his office for the examination of diphtheria swabs, and later in his almost pioneer discovery of the enteric fever carrier (1906) at the Brentry Inebriate Homes, and in his inimitable dealings with introductions of small-pox and plague into the Port of Bristol. Few in this county or the country at large realise how much they owe to men like Davies. It was a great loss to one who had the privilege of his friendship when he resigned his appointment some seven years ago and retired, finally going to Devon; when I saw him there a few months ago he displayed the same mental keenness and interest in public health generally and the same charm of manner."

Dr. Davies married first Louisa Gertrude, daughter of Richard Carden Despard, who predeceased him and by whom he had two sons; and he is survived by his second wife, Margaret, widow of the Rev. J. F. E. Faning.

SUNDERLAND ROYAL INFIRMARY.—Last year this institution treated 1105 more in-patients than in 1931, an increase of 12½ per cent., and 3518 more out-patients. The bed cost averaged £125 18*s.* 5*d.*, a reduction of £9 14*s.* 10*d.* The ordinary expenditure fell by nearly £2000, but there was a deficit of £3531.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

WOMEN AND HEALTH CONDITIONS IN INDIA

IN the course of the three-day debate (March 27th–29th) in the House of Commons on Sir SAMUEL HOARE'S resolution to appoint a Select Committee of Lords and Commons to consider the future government of India, Miss RATHBONE raised the question of the position of women under the new Indian constitution. She said she wondered whether those who spoke of minorities in connexion with the Indian question ever remembered India's largest minority, its women. Yet women in India were not only a minority numerically, but they were also a minority distinguished by the feature which alone justified the safeguarding of a minority—namely, the possession of special needs and interests which were likely to be neglected unless special provision was made for them. That this was so of Indian women the Government did not deny. They attempted in the White Paper to make special provision for women in special franchise qualifications and reserved seats on the legislatures. Her point was that that provision was entirely inadequate. Strict purdah as practised among the lower middle classes—and it was among these that many people thought that the practice was extending rather than decreasing—often meant that girls from the age of 12 onwards were shut up in two or three dark rooms into which no ray of sunshine ever penetrated, which they practically never left for years, except to go into a dirty little walled court, with the result that there was a frightful death-rate from tuberculosis and other horrible diseases which were the direct result of the lack of sunlight. According to the most recent reports the tuberculosis rate in India, a land of fierce sunshine, was rapidly spreading, especially among girls of from 10 to 20 years old, and for one boy who died from tuberculosis five girls died. Who could defend the abominable injustice which permitted a mere child to be married to a man whom she had never seen, and bound her to him indissolubly for life, while he was free to cast her aside merely because she was barren, or because he preferred someone else. Then there was child marriage. Let hon. Members read that most terrible but very courageous document, the Joshi Report on Age of Consent and Marriage. That weighty committee of Indian judges, lawyers, and doctors, appointed by the Government, after a year's exhaustive examination of the subject were evidently so overwhelmed with the horror of the evidence brought before them that they could hardly find words strong enough to express it, and they summed up their findings in a passage which deliberately compared child marriage leading to premature maternity, in its intense suffering and devastating effects on the vitality of the race, to the bygone practice of *suttee*, or the burning of widows alive on their husband's funeral pyres. They reported that the custom was decreasing hardly at all, and that even to-day almost 50 per cent. of the girls of India were married before they were 15, and large numbers before they were 5.

RISKS OF MATERNITY

In this country we considered a death-rate of nearly four maternal deaths per 1000 births as something shocking, and a recent report pronounced that more than half of those deaths were avoidable. In India by a very cautious and conservative estimate—most people with whom she had discussed this subject thought it far too conservative, but she liked to err on the safe side—there could not be fewer than 126,000 deaths of mothers every year, or 14 every hour. And such deaths, many of them of young girls in their very early 'teens, prolonged agonising deaths, without any kind of anæsthetic or medical attendance of any kind, except that of a dirty, untrained, ignorant, village midwife, for in all British India, with nearly 130,000,000 women and girls, and with 8,000,000 births every year, there were, according to a recent report, only about 400 fully qualified medical women, although the great majority of the women were forbidden by their social customs to accept attendance from anybody but a woman. As for trained nursing, it was in its infancy, and except in the towns the numbers of nurses was negligible; and the same was true of trained midwives. No wonder that the Health Commissioner for India in his latest report began this part of his subject as follows:—

> "The problems attending maternity work, and in particular maternal mortality, show a depressing tendency to remain completely unsolved—one is tempted to add insoluble."

Again:—

> "Advance in this branch of health work is extremely slow, and it is only by looking back a considerable number of years that we can appreciate progress at all."

How could that progress be quickened? How could they stop this river of dreadful death? The Health Commissioner himself, in one of his unusual incursions into politics, gave the answer:—

> "Entry of women into public life: with the new constitution many women will be enfranchised. Naturally their interests will focus on problems which specially concerned them. . . . This will be reflected in legislation concerning women and children."

Every recent committee and commission had hinted at the same connexion between cause and effect and suggested the same remedy. Let the women take a hand, they said, and bring about the social reforms which were necessary for them. The White Paper accepted the proposal as to reserved seats, but as regarded franchise it had thrown the great majority of women voters overboard. By the device of requiring the great majority of wife voters to apply for their votes it provided a check which most people who knew anything about social conditions in India would agree was likely to cut down their voting strength to very little, if any, better than the original "less than one-twentieth of the electorate." She asked the Government to consider what effect this whittling down of the hopes that had been held out was likely to have on the ardent, excitable women of India. Many of them were halting between the path of coöperation and the path of revolutionary agitation. Into which of these paths were the Government pushing them? If it was true, as most responsible observers believed, that there was no way of changing the terrible conditions to which she had referred, except through the political influence of women, might it not be the case that on this part of the White Paper, which seemed to most hon. Members to be so relatively unimportant, might hang issues of life and death for literally hundreds of thousands, perhaps millions of women in the years to come? Britain had not been able to do much for Indian women during the century and a half of her rule. We had done something, but not much. Whenever measures were proposed to help the women the argument—was it not sometimes the excuse—had always been that we as alien rulers dare not interfere lightly with social customs based on religious traditions which we did not share. Now that we were going to hand over practically unfettered control—for the famous safeguards did not affect such lesser matters as education, health, and marriage laws—to whom were we going to hand over? To Indians, but to which Indians were we going to hand them over? To the men who had inflicted these terrible social customs, or also to the women who had suffered under them? If even the moderate proposals which were contained in the White Paper were withheld from India, who could doubt that there would be an enormous surge into the ranks of Congress and into the most revolutionary part of that body? What

was the best safeguard against that? She would join her voice with those who had pleaded with the Government to bring about, if they could, a better atmosphere of goodwill in India by releasing those leaders of Congress who were now under detention.

GOVERNMENT'S REPLY

Mr. BUTLER (Under Secretary for India) said that those who had criticised the Government for not further increasing the women's franchise were not necessarily doing the women of India a good turn by their criticism. The opportunities for women had been increased enormously by the proposals in the White Paper. It was proposed that there should be nine seats for women in the Central Assembly, and the numbers of the women electorate had been increased from 55,000 to 360,000. In the provinces as many as 41 seats were reserved for women, and the actual extent of the franchise had been increased to just over 6,000,000. Therefore it was an exaggeration to say that opportunities were not being given to women under the new franchise. He believed that the social position of women was one of the most important points in the future constitution of India.

Royal Assent

In the House of Lords on March 29th the Royal Assent was given by commission to the following Acts:—

The Indian Pay (Temporary Abatements) Act; the Local Government (General Exchequer Contributions) Act; the Ministry of Health Provisional Order Confirmation (Rugby Joint Hospital District) Act; the Ministry of Health Provisional Order (Taunton and District Joint Hospital District) Act; the Ministry of Health Provisional Order Confirmation (Eton Joint Hospital District) Act.

Nurses Registration

In the House of Commons on Monday, April 3rd, Mr. BATEY presented the Nurses Registration Act (1919) Amendment Bill, a measure to amend the 1919 Act with respect to the registration of existing nurses. The Bill was read a first time.

Registration of Osteopaths

In the House of Commons on Tuesday, April 4th, Mr. BOOTHBY asked leave to introduce the Registration and Regulation of Osteopaths Bill. He said that this measure proposed to set up a statutory board with the necessary powers and authority to compile a register of qualified osteopaths, and to supervise the admission to that register of persons who had followed a prescribed course of study and who had acquired a prescribed standard of professional competence. Under the Bill an unqualified and incompetent charlatan and quack would be debarred from practising osteopathy, which was not the case under the existing law. Further, under the Bill a fully qualified osteopath would be in a position to employ a fully qualified anæsthetist in the course of his work without the anæsthetist falling under the ban of the General Medical Council. The case of Dr. Axham would probably still be fresh in the memory of the House, and no hon. Member would wish to see that case repeated in the future. Osteopaths did not seek inclusion in the general medical profession; all the osteopaths were asking in this Bill was for recognition by the Legislature, with statutory authority to regulate their own affairs with a view to the protection of the public. The methods of qualified osteopaths had been attended during the last two or three years with a great measure of success. Osteopathy was now widely practised in this country, and if it was bad it should be prohibited in the public interest, or alternatively it should be regulated, as it was in 47 out of 48 States in America.

Leave to introduce the Bill was granted without a division. Mr. BOOTHBY then brought in the Bill, which was read a first time.

HOUSE OF COMMONS

WEDNESDAY, MARCH 29TH

Registration Acts (Transfer of Functions)

Capt. CUNNINGHAM-REID asked the Minister of Health if he was satisfied that the transfer of functions under the Registration Acts provided for by Part II., Clauses 21 to 28, of the Local Government Act, 1929, were working smoothly in practice; and if the relations between the Registrar-General and the local authorities concerned had been harmonious.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: Yes, Sir; these provisions are, my right hon. friend believes, working smoothly and with a full measure of coöperation between the Registrar-General and the local authorities concerned.

Pit-head Baths

Mr. TINKER asked the Secretary for Mines the total number of pit-head baths in use at the present time and the average number of persons who used them, with corresponding figures for Lancashire.—Mr. ERNEST BROWN replied: The number of mines in Great Britain with pit-head baths in use at the present time is 130, of which 12 are in Lancashire. I regret that I am unable to state the average number of persons at present using them, but in general it ranges between 70 and 100 per cent. of the number employed at the mines concerned. The total number of men and boys employed in December, 1931, at the mines which now have baths in use was 164,707, of whom 13,331 were at mines in Lancashire.

THURSDAY, MARCH 30TH

Insurance of Hospital Porters

Sir F. SANDERSON asked the Minister of Labour whether he was aware that by a ruling of the High Court it had been decided that hospital porters should be classed as domestics, and were, therefore, not insurable under the Unemployment Insurance Acts; and whether, in view of the hardship to these men in the event of their becoming unemployed, he would, when amending the Acts, make provision for their being classed as insurable persons.—Sir HENRY BETTERTON replied: I am aware of the judgment referred to. The Royal Commission on Unemployment Insurance recommended that this class of workers should be brought within the scope of the Unemployment Insurance Acts, and this recommendation is at present under consideration.

Sale of Dangerous Toy Pistols

Mr. RHYS DAVIES asked the Home Secretary when it was proposed to bring in legislation to prevent the sale of dangerous toy pistols.—Sir J. GILMOUR replied: As I indicated in reply to a question on Feb. 16th, new legislation, which is at present under my consideration, is contemplated not to deal specifically with the sale of dangerous toy pistols, but directed to the provision of special penalties on persons who, when engaged in the commission of crime, are found in possession of firearms or colourable imitations of firearms. A Bill for this purpose is in draft, but I am not in a position to say whether, in view of the state of parliamentary business, time can be found this session to deal with this matter.

Mr. LEVY asked if the right hon. gentleman's attention had been called to a recent case in which a child was killed by a toy pistol which had been turned into a lethal weapon by removing the plug from the barrel.

Sir J. GILMOUR said that no doubt the hon. Member had in mind the recent incident in which a London schoolboy was fatally shot, and in respect of which proceedings were now pending in the courts. The weapon used was not, however, a toy pistol as described in the question, but a single-barrelled ·22 pistol of German make. Such a pistol was a firearm within the meaning of the Firearms Act, 1920, and he had no sufficient reason to suppose the existing law was not sufficient to control the sale of lethal firearms of this class.

Mr. LEVY asked if the right hon. gentleman was aware that there had been quite a number of accidents from these toy pistols lately, and that they had in those instances been turned into lethal weapons. Had the right hon. gentleman power to prohibit the sale of these weapons immediately pending further legislation?

Sir J. GILMOUR said that this particular weapon came within the existing law. With regard to the other class of weapon he had been considering legislation on the subject.

Prohibition of Night Work

Lord APSLEY asked the Home Secretary whether, in view of the proposed legislation prohibiting many forms of night work, he would institute an inquiry into the effects of such work on the health of those who took part in it, particularly

in view of the large number of occupations in which such work was carried on without prejudice to health.—Sir JOHN GILMOUR replied: I am not aware of any proposed legislation prohibiting night work other than the Night Baking Bill. The effect on health of night baking was carefully investigated in 1919 by a departmental committee, which found that, whilst night work is likely to be less conducive to good health than day work, there was no evidence that night work in bakehouses was unduly detrimental to health. In the circumstances I do not think any further inquiry such as is suggested in the question is necessary.

Woman's Detention at Broadmoor

Major ATTLEE asked the Home Secretary whether he would inquire into the case of Mrs. Minnie Stathers, of 107, Westparade, Hull, who had been detained in Broadmoor asylum for the last ten years, and who, although her condition was now proved by medical certificate to be normal, had not yet been released.—Sir JOHN GILMOUR replied: This case, like all others at Broadmoor, is reviewed from time to time, and it is only a few days since I called for and considered a special report on it. I regret, however, that in view of all the circumstances, I should not feel justified in authorising Mrs. Stathers' discharge.

Government and the Depressed Areas

Mr. Logan asked the Prime Minister if the Minister of Health and the Minister of Labour had placed before him the views of the deputation from the depressed areas on March 27th; and, if so, had he any statement to make.—Mr. MACDONALD replied: Yes, sir, I have received a report from my right hon. colleagues, and the whole matter is under consideration.

An Army Pensioner's Mental Condition

Mr. MCGOVERN asked the Minister of Pensions the reasons for refusal of full pension to Gordon Lowe, 591, Tollcross-road, Glasgow; if he was aware that this man was wounded and both lungs punctured at the Somme, and, as a result, he was an inmate of the Argyll and Bute Mental Hospital suffering as a result of his war experiences, and his wife and child drawing poor-law relief; and would he make an award of full pension to this man.—Major TRYON replied: This man is in receipt of a life pension in respect of the disablement arising from his wound. The unfortunate mental affection from which he also suffers and which has manifested itself in recent years could not be certified to be the result of the wound or of service, and is, therefore, not pensionable by my department.

Mr. MCGOVERN: Seeing that the overwhelming evidence of the doctor in charge of the mental institution and of others is to the effect that the mental condition of this man is directly attributable to the results of his wounds, will the right hon. gentleman be prepared to consider giving him a full pension and taking his wife and child off parish relief?

Major TRYON: The opinion of the doctor referred to by the hon. Member is not by any means as decisive as the hon. Member suggests. I have just been through the whole of his report. In view of the importance of this case, and the interest in it which I share, I had the matter referred to an independent specialist who is an eminent authority of the highest standing on mental cases, and who was selected by the President of the Royal College of Physicians, and on his decision it is clearly made out that a claim is not established.

MONDAY, APRIL 3RD

Europeans in Indian Civil Service

Sir ALFRED KNOX asked the Secretary of State for India the number of Europeans in the Indian Civil Service and the Indian police, respectively, in 1928 and at the present time; and what estimate was made of the number that would remain in five years' time provided that the present rate of Indianisation continued.—Sir S. HOARE replied: On Jan. 1st, 1928, there were 922 Europeans in the Indian Civil Service and about 569 in the Indian police; the corresponding figures on Jan. 1st, 1932 (the latest date for which particulars are available), were 843 and 528. Provided that the present rate of Indianisation continues, there should, on the basis of the present candidatures, be about 670 Europeans in the Indian Civil Service and about 460 in the Indian police on Jan. 1st, 1938.

The League and the Drug Traffic

Mr. HANNON asked the Secretary of State for Foreign Affairs whether his attention had been called to the publication of the annual report for the year 1932 of the Central Narcotics Intelligence Bureau, presented to the Egyptian Government by Russell Pasha, in which coöperation among European nations for the suppression of the drug traffic trade was emphasised; if His Majesty's Government intended to ratify the convention agreed at Geneva in 1931 for the limitation of the manufacture of narcotics; what other States had decided to sign the convention; and if steps would be taken through diplomatic channels to secure that they would conform to it.—Sir J. SIMON replied: The answer to the first part of the question is in the affirmative. As regards the second part of the question, the ratification in respect of the United Kingdom was despatched to the Secretary-General of the League on March 30th. As regards the third part of the question, I presume that my hon. friend intends to inquire what other States have decided to ratify the convention. I am not in a position to give any precise information on this point, but I anticipate that sufficient ratifications will have been received to enable the convention to be brought into force by July 13th, 1933. As regards the last part of the question, I see no reason to anticipate the failure of any party to the Convention to conform to its provisions.

Military Medical Services in India

Mr. MCENTEE asked the Secretary of State for India whether the Government of India would consider the advisability of implementing the recommendation of the Army retrenchment advisory committee with regard to the abolition of separate medical services and military hospitals for Indian and European troops in India.—Sir S. HOARE replied: The Government of India's views have been stated in the explanatory note on the medical services on page 95 of the Defence Budget Estimates for 1933–34. I am sending the hon. Member an extract.

TUESDAY, APRIL 4TH

Health Insurance and Medical Benefit

Sir ROBERT ASKE asked the Minister of Health whether he had considered the resolution passed at a conference of the north-eastern insurance committees, held on March 10th, 1933, to the effect that provision should be made for the continuation of the existing medical benefit to those insured persons whose right to such benefit would terminate on or after the end of the present year owing to prolonged unemployment; and whether he would consider introducing legislation to deal with this matter.—Sir E. HILTON YOUNG replied: The answer to the first part of the question is in the affirmative. This matter was very fully discussed when the amending National Health Insurance Bill of last year was before Parliament, and I am not prepared to introduce further legislation on the subject.

Infectious Diseases Regulations

Mr. NEIL MACLEAN asked the Minister of Health whether he would make available to Members of this House the circular issued by his department to local authorities instructing them to reduce the period of isolation in infectious cases and to have the patients discharged sooner from institutions, and the instructions to local authorities to abandon the disinfecting of houses from which cases of infectious diseases had been removed; and whether he could state the date when this circular was issued.—Mr. SHAKESPEARE replied: My right hon. friend has issued no such instructions, but he assumes that the hon. Member refers to the recent circular in which he asked local authorities to give special consideration to the recommendations on these subjects which are contained in the report of the Committee on Local Expenditure. The date of the circular is March 22nd, and my right hon. friend will arrange for copies to be placed in the library of the House.

NEW WELSH TUBERCULOSIS HOSPITAL.—The sanction of the Ministry of Health has been given to the erection of a tuberculosis hospital of 300 beds, at a cost of £229,000, at Sully, near Cardiff. The county and county borough councils of Wales and Monmouthshire are finding the money, and the annual cost is estimated at £53,000.

A HOSPITAL ON THAMES MUD.—Last week Mrs. A. B. Williamson, widow of a former member of the committee of the Missions to Seamen, drove the first pile in the foundation of a new hospital and institute for seamen which is to be built in Victoria Dock-road, West Ham, at a cost of £40,000. The nine-storey building is to be erected on Thames mud, the site being 11 feet below the river high-water mark. A concrete and steel raft, weighing nearly 24,000 tons, will be placed upon a foundation of 300 reinforced concrete piles. The front of the building will look like a lighthouse from which will radiate long balconies reminiscent of the decks of ships. The beacon inside the lighthouse will be illuminated at night. The accommodation to be provided includes 150 bedrooms, a gymnasium, chapel, and a laundry, and there will also be four self-contained flats for the chaplain of the mission and his assistants.

MEDICAL NEWS

Society of Apothecaries of London

At recent examinations the following candidates were successful :—

Surgery.—B. K. Siddhanta, Calcutta Medical Coll.

Medicine.—F. W. Baskerville, St. Mary's Hosp. ; L. Bhanot, Royal Free Hosp. ; J. E. Morrish, St. Mary's Hosp. ; and J. A. Van Rooyen, St. Bart.'s Hosp.

Forensic Medicine.—C. W. Cross and J. B. Frumin, Guy's Hosp. ; L. R. Jain, Univ. of Birmingham ; V. L. Kahan, Univ. of Cambridge and London Hosp. ; E. Pugh-Jones, Guy's Hosp. ; J. D. Taylor, Univ. of Manchester ; and P. D. Thomas, St. George's Hosp.

Midwifery.—J. Burdon-Cooper, Univ. Coll. Hosp. ; T. R. Hornby, Univ. of Manchester ; L. R. Jain, Univ. of Birmingham ; V. L. Kahan, Univ. of Cambridge and London Hosp. ; J. D. Taylor, Univ. of Manchester ; and A. W. Turner, St. Mary's Hosp.

The following candidates, having completed the final examination, have been granted the diploma of the society entitling them to practise medicine, surgery, and midwifery : F. W. Baskerville, L. Bhanot, J. Burdon-Cooper, V. L. Kahan, and B. K. Siddhanta.

University of Aberdeen

On March 29th the honorary degree of LL.D. was conferred on Sir John Marnoch, emeritus professor of surgery in the university, and on Mrs. Trail, widow of Prof. J. H. S. Trail, M.D., F.R.S., of the chair of botany in the university.

Other degrees were afterwards conferred as follows :—

M.D.—A. G. Emslie, N. D. Begg, E. D. Gray, Jean N. Howie, J. B. Jessiman, and R. A. Stephen.

M.S.—G. A. G. Mitchell.

M.B., Ch.B.—R. M. Campbell (with second-class honours), Alfred Cowie, A. D. Davidson, A. B. Donald, R. E. Glennie, Alan Grant, P. F. Groenewald, J. D. Lees, N. H. R. McCallum, J. R. Martin, A. M. Michie, Arthur Reith, and G. M. Steinbach.

D.P.H.—A. G. Emslie.

University of Dublin

At recent examinations in the School of Physic, Trinity College, the following candidates were successful :—

M.D.

L. J. Coetzee, W. B. Hamilton, F. M. Purcell, H. V. Tighe, and P. F. H. Wagner.

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Medicine.—J. R. Counihan, E. A. Smyth, D. S. Torrens, R. G. Taylor, P. A. O'Callaghan, and A. W. Callaghan.

Surgery.—J. R. Counihan, E. A. Smyth, R. G. Taylor, Ray G. Barron, W. M. E. Anderson, Robert M'Neilly, C. C. Langford, J. J. Russell, A. B. Warren-Darley, and Edith M. P. Brodrick.

Midwifery.—R. B. Hunter, Kevin O'Toole, I. T. F. Wiley, Una M. Irvine, R. H. Simon, E. G. Ashton, and J. A. M'Ilveen.

D.P.H.

Part I.—S. G. Rainsford, W. E. Holmes, E. S. Duthie, Marjorie L. Campbell, J. V. Ryan, A. A. Lisney, and I. G. M'Intyre.

Marie Celeste Samaritan Society

Last year this society, founded in 1791 by Sir William Blizard, surgeon to the London Hospital, to supplement the work of that institution, assisted in various ways 14,448 patients, the largest number on record. Of these 4861 were provided with surgical appliances, and 2591 were sent away to various homes and sanatoriums.

Workshop for ex-Tuberculous Patients

On April 3rd Sir Henry Betterton, the Minister of Labour, opened the new premises at 36 and 38, Bolsover-street, London, W., which have been acquired for the Spero leather workers. The workshop, which was started in 1923, is under the control of the Central Fund for the Industrial Welfare of Tuberculous Persons, which provides regular work in favourable surroundings for ex-tuberculous patients, who work under expert medical supervision and for a shorter week that is customary in the trade.

Cancer Hospital (Free)

The Trustees of the Halley Stewart Trust have made a grant for a period of three years to support a whole-time worker who will undertake biochemical investigations into the metabolism of cancerous growths. Dr. C. A. Mawson, of the Victoria University of Manchester, has been appointed to carry out this work. A grant has been received also from the International Cancer Research Foundation, which is an organisation established last year in Philadelphia by Mr. William H. Donner and endowed by him with a sum of $2,000,000. The Trustees have awarded a sum of £1000 per annum for a period of two years to the Cancer Hospital Research Institute in support of investigations into factors which underlie the origin of malignant growths. This sum will provide two research studentships, to one of which Mr. G. A. D. Haslewood has been appointed.

University of Birmingham

On his retirement from the office of pro-chancellor in the University, Sir Gilbert Barling, F.R.C.S., has been elected a life member of the court of governors.

London County Council : the Consultant Staff

On Tuesday last the chairman of the central public health committee stated that, up to that date, 591 applications had been received for appointment to the Council's consultation and specialist staffs, and that the applicants were fully representative persons.

Auxiliary R.A.M.C. Funds

The annual meeting will be held at 5.45 P.M. on April 21st, 1933, at 11, Chandos-street, Cavendish-square, W.1, when the annual report and financial statement for the year ended Dec. 31st, 1932, will be presented and the officers and committee for the current year elected.

University College Hospital Medical School

Various entrance scholarships and exhibitions tenable at this school are now open. These include two Goldsmid entrance scholarships, one Goldsmid entrance exhibition, and a Filliter entrance scholarship in pathology. Further particulars may be obtained from the secretary of the school, University-street, London, W.C.1.

India and Medical Progress

Sir Walter Fletcher, secretary of the Medical Research Council, has chosen this title for the Birdwood Memorial lecture which he will deliver before the Indian section of the Royal Society of Arts on Friday, May 12th. The lecture will be given at 4.30 P.M., at the society's house in John-street, Adelphi, London, W.C.

Livingstone Hospital, Dartford

Mr. A. M. Fleet recently opened the additions to this hospital. A large detached building has been converted into a centre for light treatment, electrical therapeutics, and massage, and the Tomlinson Home has become the new maternity department with accommodation, which can be increased, for five patients.

Hastings Municipal Hospital

The mayor of Hastings, Mr. H. Burden, resently opened extensions of the municipal hospital which have cost £20,000. The enlargements include a women's ward of 38 beds, a ward for 20 children and 10 babies, and a tuberculosis ward. The children's block has three isolation wards, a ward for nursing mothers, and two day nurseries.

Trinity College, Dublin

The annual dinner of the Dining Club will take place on June 14th at the May Fair Hotel. The guests of the evening will be the Most Rev. Dr. D'Arcy, Lord Primate of Ireland, and Lord Moynihan of Leeds. In the chair, Sir Geoffrey Rothe Clarke, C.S.I., O.B.E. Further particulars may be obtained from the hon. secretary, Mr. H. W. Exham, at 4, Park-place, London, S.W. 1.

British Social Hygiene Council

A meeting was held at Carteret House on March 20th, Sir Basil Blackett, the president, being in the chair. He said that the financial difficulties at the moment hampered progress, but the Council had been successful during the year in influencing public opinion on the importance of including biology in the education of children. He himself had been in South and East Africa, where he had found much interest being taken in social hygiene, and had been specially glad to find in Uganda that the ravages of venereal disease had been checked. The secretary-general of the Council expressed their gratification in having secured Dr. D. Shiels as medical secretary, and on the new attitude of the National Union of Teachers favouring biological teaching in secondary schools. Great advances were being made in Kent later, where the health and education committees work together, with lectures to parents and teachers. The treatment provided for seamen in foreign ports was being examined. Mr. W. W. Vaughan, formerly headmaster of Rugby, addressed the Council on the importance of the teaching of biology in schools. He held that biology should be one of the subjects that could be chosen by candidates for the School Certificate Examination. It appealed to some children who were bored with laboratory work. Biology could be taught more easily than some other sciences, for it required little apparatus. He quoted W. Bateson's theory that children should be taught something of everything, "especially what we animals are." They should be taught for life, not for their special trades, and nothing would do this better than biology.

Manchester Victoria Memorial Jewish Hospital

Sir Louis Baron recently opened the new Bernhard Baron wing of this hospital, named after his late father, who bore the cost. The accommodation has thus been increased to 114 beds, with a theatre, surgical wards, sunlight, massage, and X ray departments, pathological laboratory, pay wards, and children's wards.

British Charities Association

It was stated at the recent annual meeting of this association that the net surplus on the year available for distribution to hospitals was £22,767. Since its inception in 1923 the association has distributed £227,162 to over 950 hospitals and other charities, of which £103,863 went to hospitals in the London area. Most of the money was raised through competitions.

Removal of a Hospital

On March 31st the whole of the patients and staff, about 180 in number, were removed from the Ministry of Pensions Hospital at Maghull, near Liverpool, to another hospital at Chepstow, Monmouthshire. They were taken by a special train, which left at 10 A.M. and arrived at Chepstow at 3 P.M. There were several stretcher cases among the patients.

Croydon Hospital

The pressure upon this hospital is increasing so rapidly that it has been decided to add a further 64 beds, 17 of which will be for paying patients, at a cost of £34,000. Last year there were 2566 in-patients, compared with 1942 in 1931. Their average stay was nearly 17 days, and the cost of each £6 17*s.* 9*d.* Out-patients exceeded 31,000; they made 125,839 attendances, a decrease of more than 1000.

A "Health Centre" at Peckham

A public meeting was held at Camberwell recently to launch the "Pioneer Health Centre," which it is proposed to establish in St. Mary's-road, Peckham, in a building estimated to cost £30,000. It is anticipated that the centre will treat 2000 families at an inclusive charge of 2*s.* per week per family. Privileges of membership will include periodical medical examinations of all the members of the family, and the use of the buildings, grounds, and equipment.

Queen Charlotte's Hospital

At the annual meeting recently it was reported that in the past year there had been 2646 in-patients in the old and new premises combined—the largest number on record. Mothers delivered in their homes by Queen Charlotte's midwives numbered 1798. The accommodation is now 132 beds, and there has been "a vast extension" of district out-patients' work, the area reaching from St. Pancras and Marylebone to Ealing and Wandsworth.

The Leeds Hospitals

A Leeds voluntary hospitals' council has been formed for giving advice and help to the constituent institutions which at present consist of the General Infirmary, the Hospital for Women, and the Maternity Hospital. The whole of the gynæcological work of the city will be taken over by the Hospital for Women, which will provide 12 additional beds. Last year it treated 1431 in-patients, whose average stay was 13·5 days; in its first year, 1905, the average stay was 22 days. The Leeds Maternity Hospital made an all-round series of records. In- and out-patients were more numerous, the proportion of the city's births—32·96 per cent.—was larger, and both income and expenditure exceeded all previous figures. At the Leeds General Infirmary in 1932 there were 60,000 new patients, of whom over 13,000 were in-patients. There were 11,912 operations. The income of £107,155 was an increase of £2600. Motor accidents accounted for 1232 patients, who cost £4979, of which only £1805 was recovered.

Vacancies

For further information refer to the advertisement columns

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
Ancoats Hospital Convalescent Home, Great Warford, Alderley Edge.—Hon. Visiting Phys. £50.
Aylesbury, Royal Buckinghamshire Hospital.—Res. M.O. At rate of £200.
Ayr, Glengall Hospital for Mental Diseases.—Asst. M.O. £300.
Beckenham, Bethlem Hospital, Monks' Orchard, Eden Park—Res. H.P. At rate of £150.
Birkenhead Infirmary.—Med. Supt. £1000.
Birmingham, Little Bromwich Hospital for Infectious Diseases.—£300.
Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.
Blackburn Royal Infirmary.—Fourth H.S. £150.
Bristol General Hospital.—Hon. Asst. Surgeon. Also Hon. Med. Registrar.
Bury St. Edmunds, West Suffolk General Hospital.—Sen. Res. M.O. £180.
Cambridge, Addenbrooke's Hospital.—Hon. Surgeon. Also Hon. Surgeon in charge of Ophthalmic Dept. Also H.P. At rate of £130.
Cancer Hospital, Fulham-road, S.W.—Clinical Pathologist. £850.
Cardiff, Welsh National School of Medicine.—Jun. Asst. in the Surgical Unit. £450.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100. Also Physician to In-patients.
Derby, Derbyshire Royal Infirmary.—Ophth. H.S. and Anæsthetist. £150.
Eastbourne County Borough.—Asst. to the M.O.H. and School M.O. £550.
Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—Anæsthetist 50 guineas.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Hon. Clin. Assts.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.
Finchley Memorial Hospital, Granville-road, N.—Res. M.O. At rate of £150.
French Hospital and Dispensary, 172, Shaftesbury-avenue, W.C. Jun. Res. M.O. £100.
Grimsby and District Hospital.—Jun. H.S. £150.
Halifax Royal Infirmary.—Third H.S. At rate of £150.
Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.
***Hospital for Consumption and Diseases of the Chest, Brompton, S.W.*—Two Asst. Surgeons.**
Huddersfield Royal Hospital.—Jun. Cas. O. and Res. Anæsthetist. £150.
Institute of Child Psychology, 20, Warwick-crescent, W.—Hon. Physician for Parents' Dept.
Inverness, Royal Northern Infirmary.—H.S. At rate of £100.
Italian Hospital, Queen-square, W.C.—Hon. Asst. Physician.
King Edward Memorial Hospital, Ealing.—Jun. H.S. £150.
***Lancaster Royal Infirmary.*—Sen. and Jun. H.S. At rate of £175 and £130 respectively.**
Leicester Royal Infirmary.—Cas. H.S. £125.
Linden Lodge, Bolingbroke-grove, Wandsworth Common, S.W.—M.O. £42 14*s.*
Liverpool County Borough.—Jun. Asst. School. M.O. £700.
Liverpool, Hahnemann Hospital, Hope-street.—Res. M.O. At rate of £100.
***L.C.C.*—Asst. M.O.'s for Various Hospitals. Each £350. Grade II. Asst. M.O.'s. Each £250. Temporary Asst. M.O. for St. Andrew's Hospital, Bow, E. At rate of £250. Also Temporary District M.O.'s. £125–£300.**
Macclesfield General Infirmary.—Second H.S. At rate of £150.
***Manchester, Ancoats Hospital.*—H.S. At rate of £100.**
Manchester, Baguley Sanatorium.—Sen. Asst. M.O. £500.
Manchester, Monsall Hospital, Newton Heath.—First Asst. Res. M.O. £600.
Newcastle-upon-Tyne Education Committee.—Asst. School M.O. £500.
***Nottingham General Hospital.*—H.S. At rate of £150.**
Plymouth City Hospital.—Asst. Res. M.O. £200.
Plymouth City Mental Hospital.—Asst. M.O. £350.
***Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.*—Hon. Asst. Surgeon.**
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Registrar. 20 gns.
Queen's Hospital for Children, Hackney-road, E.—Refraction Officer. £1 16*s.* per Session.
***Royal Army Medical Corps.*—Commissions.**
Royal College of Surgeons of England.—Examiners.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
St. Mary's Hospital, W.—Second Asst. Pathologist. £250.
Sheffield Royal Infirmary.—Asst. Aural and Ophthalmic H.S. At rate of £80.
Southampton, Royal South Hants and Southampton Hospital.—Pathologist. £800.
Southend-on-Sea General Hospital.—Second H.S. At rate of £100.
Stafford, Staffordshire General Infirmary.—H.P. At rate of £150.
Surrey County Sanatorium, Milford, nr. Godalming.—Third Asst. Res. M.O. At rate of £250.
Taunton and Somerset Hospital.—H.S. At rate of £100.
Walsall County Borough.—Asst. M.O.H. £500.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W. Hon. Orthopædic Surgeon.
***Western Ophthalmic Hospital, Marylebone-road, W.*—Sen. Res. and Jun. H.S.'s. At rate of £150 and £100 respectively.**
***West London Hospital, Hammersmith, W.*—Non.-res. House Officer. At rate of £150.**
West Riding of Yorkshire County Council.—Asst. Tuberculosis Officer. £500.
***Willesden General Hospital, Harlesden-road, N.W.*—Asst. Surg. O. £50.**
Wolverhampton Royal Hospital.—H.S. At rate of £100.
York, The Friends' Retreat.—Jun. M.O. £300.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Sawston, Cambridge, and Shipley, York, West Riding.

A vacancy is announced for a Medical Referee under the Workmen's Compensation Act, 1925, for the Brecon County Court District (Circuit No. 28). Applications for the post should be addressed to the Private Secretary, Home Office, Whitehall, London, S.W.1, and should reach him not later than April 26th.

NOTES, COMMENTS, AND ABSTRACTS

ROYAL SANITARY INSTITUTE

AT a meeting arranged by this institute, and held on March 29th, the chair was taken by Dr. CHARLES PORTER.

Lieut.-Col. C. WALEY-COHEN opened a discussion on

Standards in the Milk Industry

Quoting from the report of the Reorganisation Commission for Milk, he said that propaganda on the part of the medical profession was probably instrumental in deterring parents from giving milk to their children to drink, but that our milk consumption could be increased with benefit to the health of the nation and the milk industry. For the majority of people, however, milk from tuberculin-tested herds was too expensive. He had himself started milk production in West Sussex during 1920, and following the issue of the Milk and Dairies Order in 1926 had arranged a conference between the medical officers of the county, a representative of the Ministry of Health, and the milk adviser to the County Council. At this conference it had been agreed that medical officers and sanitary inspectors and the advisory and educational staff of the county ought to work in close coöperation, and since that time there had been a complete absence of friction between medical officers and the milk industry. One factor contributing to this friendly spirit was the fact that when a sample of milk was taken, the medical officers in West Sussex informed the producer of the result—when the milk was exceptionally good as well as when there was some fault to be found. The medical staff were now regarded as friends, not as enemies, by the producers. Similar coöperative systems were in force in Leicestershire, Kent, Lanarkshire, and at Bristol University.

There had been a marked improvement in clean milk production during the past ten years, and it had advanced most where the medical officers and the veterinary profession had coöperated with farmers. There were no grounds for taking a pessimistic view of the farmer of to-day; progress could not be made if one of the coöperating parties thought the others fools who were unwilling to learn—and this applied equally to farmers and medical officers or other experts.

The proposal that there should be universal inspection of herds by county veterinary officers was a step forward. For ten years, Col. Waley-Cohen said, he had, as a Grade A producer, paid for quarterly inspection by a veterinary officer. The sooner a doubtful animal was eradicated the better, and a cost of £4 per annum on a total sale of milk of £1600 seemed to him a reasonable insurance. He was in favour, generally speaking, of the Milk Commission's proposal that there should be "accredited producers," but he suggested that instead of examination of surprise samples, a monthly certificate from a bacteriologist should be substituted. Practical considerations made the faking of such surprise sample impossible. He also thought it possible that too much emphasis was laid on the question of buildings, and suggested that in cases of doubt, especially where alterations were likely to prove expensive, test by filters or a series of bacteriological counts might usefully be taken before any action was decided upon. He thought that the milk of accredited producers would quickly reach Grade A standard; and from the results of examination of Grade A milk for tubercle infection over a number of years, he thought tuberculosis due to milk would be reduced to a minimum if not entirely eliminated.

Standards might be complicated by conditions entirely outside the control of the producer. The housing conditions in crowded industrial areas had a bearing on the vital question of how far it was possible to supply reasonably safe raw milk, at a price which consumers could pay, to those living in the inner ring of such congested urban centres. Economy called for the proper use of existing machinery; successful production demanded the coöperation of medical officers of health, veterinary officers, and farm institutes. In his view the local coördinating and controlling administrative unit should be the county council. The task of raising the standard rested with the producers and distributors. He suggested that the joint board under the Milk Marketing scheme should form a committee with three representatives each of the Producers and Distributors Board, and two representatives each of the Society of Medical Officers of Health and the veterinary profession—with perhaps an appointed member as chairman—to deal with standardisation, grading, and research. He deprecated the suggestion of the Milk Commission that the Ministry of Health should consult only the appointed members of the Central Board before issuing orders; it was not desirable that the appointed members should be in a position to dictate to the industry.

Mrs. K. HOLLAS (National Grade A Milk Producers Association) said that the production of Grade A milk had been carried out as a voluntary effort, almost entirely by working farmers. Lately it had been said in some quarters that this grade of milk was worth exactly nothing. The producers realised that it was not the highest grade, but it was better than ungraded milk, and it was within reach of the consumer at a reasonable price. The results of milk tests, if performed regularly, should be a sufficient guarantee of the absence of tubercle bacilli. It took three weeks to obtain results by testing cattle, and this was admittedly a long period if infected milk was being distributed during that time. She thought that if a more rapid test could be made available Grade A milk would be quite satisfactory.

Prof. G. S. WILSON (London School of Hygiene and Tropical Medicine) thought it a mistake to rely too much on bacteriological tests; secretion of tubercle bacilli might be intermittent. He considered that the tuberculin test should be enforced for all cows yielding milk for distribution. This would ensure the absence of tubercle bacilli, but not of other pathogenic bacteria from milk. Either the milk must be produced under the best possible conditions and all animals must be tuberculin-tested, or else efficient pasteurisation must be guaranteed. In any case a higher standard of cleanliness was essential.

Mr. J. C. SIMMS (West Sussex Department of Agriculture) agreed that extended use should be made of the tuberculin test, but thought any advance in the pasteurisation of milk should be made carefully if it was to carry the farmer with it. Most farmers had realised that they could produce milk of Grade A standard, and many would be willing to have their cattle tuberculin-tested if they knew they could sell their Grade A T.T. milk at a higher price when produced. The farmers considered that they should receive 4*d.* or 6*d.* a gallon more for such milk. This would mean an increase in the retail price of 1*d.* a pint, and many families were ready to pay that for a safe raw milk.

Mr. BEN DAVIES (United Dairies Company) took exception to the phrase "reasonably safe raw milk" used by the opener. He asked Col. Waley-Cohen how he would like a servant who was "reasonably honest," or clothes which were "reasonably clean." Yet, he said, we were asked to feed our children on milk which was "reasonably safe." He thought it was a piece of effrontery for the farmers to demand 4*d.* or 6*d.* a gallon more for milk simply because it was neither dirty nor diseased. If they obeyed the Milk and Dairies Order they could not help producing clean milk. Nothing would lead to a greater

milk consumption except an increased confidence in the producers. It was impossible to pasteurise dirty milk satisfactorily.

Mr. V. L. YATES (Ministry of Agriculture) agreed that all producers ought to produce clean milk, but pointed out that the farmers were not experts. They must be encouraged and helped if they were to do the job properly. Moreover, the producer was not necessarily at fault—the churn of the distributor might be dirty. He thought that the establishment of an accredited standard would do much to restore the confidence of the consumer.

Dr. A. THOMPSON (medical officer of health of Lambeth) said that for milk coming into a crowded area, the main requirement was that it should keep. The distributors were not necessarily either honest or clean. Milk was the only animal food which we consumed raw and therefore the most dangerous.

Mr. WILFRED BUCKLEY asked how many present at the meeting would say that milk should be drunk raw by children at the present time. He thought that in order to make sure of safe raw milk it was necessary to take Certified milk and pasteurise it.

Mr. J. MACKINTOSH (British Dairy Farmers Association) asked for some guiding principles which would enable dairy farmers to know what was expected of them. He thought that pasteurisation would hold its place and be developed: the population of large cities could not get sweet milk without it. Since extra expense was involved in the production of clean milk the producers should have extra pay for it.

Mr. A. D. ALLEN (Milk Publicity Council) said that for two-thirds of the population of England and Wales the price was of great importance; five-sixths of the remainder had to limit their range of luxuries. A rise in price of milk would therefore inevitably curtail consumption. He was frequently asked: "Do you mean to say I must pay extra for clean milk? What right have the producers to offer me anything else?"—and that was a difficult question to answer.

Mr. H. WALTERS (inspector of food and drugs, Kensington) said that in his experience, when rigid standards were enforced, a great improvement had been observed in the milk produced; and this had depended, not on expensive equipment, but on the enforcement of ordinary standards of cleanliness and hygiene.

Mr. A. T. MATTICK, Ph.D. (National Institute for Research in Dairying, Reading), thought that it was not difficult to produce clean milk on a farm, but that the man who did it consistently deserved a reward. Clean-milk courses had been held at Reading and elsewhere since 1919 at which farmers, doctors, county educational staffs, and medical officers of health had attended, and this type of education could be extended.

Dr. E. H. T. NASH (medical officer of health of Heston and Isleworth) said that he found himself unable to guarantee any form of unpasteurised raw milk as fit to be given to babies.

Mr. HAROLD BARKWORTH (South-Eastern Agricultural College, Wye) thought that routine cleanliness could best be guaranteed by regular bacteriological tests. The ordinary farmer, he found, was not disposed to send samples to be investigated at his own expense, and it was a question whether this ought not to be made a compulsory measure.

A PIONEER OF PREVENTIVE MEDICINE

THE courage and persistence shown by Lady Mary Wortley Montague in her efforts to introduce and popularise the inoculation method of preventing small-pox into England from the East, where it had long been practised, is recalled by Dr. Robert Hutchison in the February–March issue of the London Hospital *Gazette*. In 1717 she wrote from Adrianople to a friend describing the procedure, announcing her intention, being "well satisfied of the safety of this experiment," to try it on her son, and adding:—

> "I am patriot enough to take pains to bring this useful invention into fashion in England; and I should not fail to write to some of our doctors very particularly about it, if I knew anyone of them that I thought had virtue enough to destroy such a considerable branch of their revenue for the good of mankind. But that distemper is too beneficial to them not to expose to all their resentment the hardy wight that should undertake to put an end to it. Perhaps, if I live to return, I may, however, have courage to war with them. Upon this occasion admire the heroism in the heart of your friend. . . ."

She evidently had no high opinion at the outset of her campaign of her medical contemporaries as a body, and the reception of her self-imposed task was certainly not calculated to remove her impression. Lady Louisa Stuart writes that she vowed that she never would have attempted it if she had foreseen the vexation, the persecution, and even the obloquy it brought upon her. The clamours raised against the practice, and of course against her, were beyond belief. The faculty all rose in arms to a man, foretelling failure and the most disastrous consequences: the clergy discanted from their pulpits on the impiety of thus seeking to take events out of the hand of providence; the common people were taught to hoot at her as an unnatural mother who had risked the lives of her own children. Dr. Hutchison suggests that the resistance of the orthodox physicians to the new method was, perhaps, not to be wondered at, since "physicians do not love intruders." It was not until 30 years later that the College of Physicians issued a declaration in favour of the practice.

Lady Mary was evidently in favour of what was practically a State Medical Service, as the following extract from one of her Italian letters shows:—

> "The method of treating the physician in this country, I think, should be the same everywhere: they make it his interest that the whole parish should be in good health, giving him a stated pension, which is collected by a tax on every house, on condition he neither demands nor receives any fees, nor even refuses a visit either to rich or poor. This last article would be very hard, if we had as many vapourish ladies as in England, but those imaginary ills are entirely unknown here.
>
> "When I recollect the vast fortunes raised by doctors amongst us, and the eager pursuit after every new piece of quackery that is introduced, I cannot help thinking there is a fund of credulity in mankind that must be employed somewhere, and the money formerly given to monks for the health of the soul, is now thrown to doctors for health of the body, and generally with as little real prospect of success."

There is evidence in Lady Mary's letters of her critical attitude and of a common sense which led her to doubt the value not only of current medical teaching but of fashionable remedies popular among her friends.

> "I find tar-water succeeded to Ward's drop," she wrote, in 1748. "'Tis possible by this time that some other quackery has taken place of that; the English are easier than any other infatuated by the prospect of universal medicines, nor is there any country in the world where the doctors raise such immense fortunes. I attribute it to the fund of credulity which is in all mankind. We have no longer faith in miracles and relics, and therefore with the same fury run after recipes and physicians."

Dr. Hutchison suggests that if Lady Mary, with her acute powers of observation, her shrewd common sense, and her combination of feminine intuition with masculine breadth of intellect, had only devoted herself to the study of medicine, she might have been a great woman doctor. She herself however thought the reputation of learning a misfortune to a woman, and in the age in which she lived this was probably only too true.

A QUESTIONNAIRE ON CANCER

Now that April 1st has come and gone, no harm can be done to the cause of the "Federal and State Society for the Study of Medicine and of Natural Science and Philosophy," which sent out from New York City a questionnaire to be returned before that date, by the publication of samples of its quality.

The investigation was designed "towards the end that the whole truth of the cancer problem may be revealed to the immeasurable advantage of the human race." The 51 questions are set out in the form of statements for comment. We select a few of these, with sympathy, probably misplaced, for the recipients, who include the directors of famous laboratories.

36. Cancer is a warning to future generations—Is especially reason and circumstances to belief the C, and tumours, is a advice to the future generations and races.
37. Convinced by a previous theory, What theory ?—You are been convinced before, previously which theoretical demostrate, the reason and the orientation, to produce cancer.
38. Have you an idea of how to cure this disease in the future. ?—and you have a idea to be able to create and discover the cause and for what reason can be, the historical cancer and tumours increased.

50. Many years lost by following wrong theories—Has been lose many years to follow a bad and inperfect orientation or my be, not orientation at all, from tuhs medicals doctors.
51. Whose fault is it ? Whose were the first mistakes ? Perhaps, indirectly they have to account for the many years lost in work day after day—Who is the fault or to blame of that, and the most remarkable of that, these talented man, has not relation in this lose of time, and years, in all of this mundial work of research by the more increase day by day, to knowm the cause of C. and the knowledge the problem of the nature that remarkable process of civilization. Results of the present investigation and who now who believe in the real advance, in the knowledge of the reason of cancer and tumours.

It should be added that the device which heads the covering letter features a porpoise gambolling, a fountain, a crusader's plumed helmet, and an arrangement of acanthus leaves, presumably a heraldic mantling.

HARROGATE SPA WATER

WE have received from Messrs. Camwal, Ltd., acting as concessionaires, a sample of Sparkling Table Water, bottled and aerated for the corporation of Harrogate from one of the well-known springs of that spa. It is the intention of the corporation, in emulation of many continental spas, to put this table water on the market, for which purpose the borough analyst has examined the fluid and made a thorough report. The water comes from a recently discovered spring, the "Oakdale," is slightly mineralised and organically pure, and is being bottled both in still and sparkling form. The alkalinity is 43·7 per 100,000, and chlorides (as salt) are present in the proportion of 5·2 per 100,000. The "Oakdale" water is in no competition with strongly alkaline waters, where the alkalinity may be nearly ten times as high, but the alkalinity is, it will be seen, practically the same as that found in one or two of the continental waters, though the salt content is lower. The Oakdale water can be recommended as having a clean and pleasant taste, and may be expected to have useful digestive qualities.

SULPHUR IN THE TREATMENT OF G.P.I.

Dr. Knud Schroeder, physician-in-chief of the Odense Hospital, Denmark, has sent a letter dealing with the earliest use of sulphur in the treatment of general paralysis of the insane. Last autumn Dr. N. G. Harris and Dr. J. A. Braxton Hicks added a note to their paper (THE LANCET, 1932, ii., 384) saying that the original suggestion was made by Dr. D. F. Tutunji in a letter in our columns on August 22nd, 1925 (p. 408); and this agrees with a statement in an annotation in our issue of July 25th, 1931, that Tutunji was the first to propose the method while Schroeder was the first to put it into practice. Dr. Schroeder points out, however, that his paper in THE LANCET of Nov. 23rd, 1929 (p. 1081), contains an account of a case treated early in 1924, and informs us that at the time Tutunji's letter appeared he had already treated two patients. There seems to be no doubt that the possibility of using sulphur in such cases occurred to Dr. Schroeder and Dr. Tutunji independently.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

HARVEIAN SOCIETY OF LONDON.
THURSDAY, April 13th.—8.30 P.M. (in the Paddington Town Hall), Mr. R. Watson-Jones, Mr. E. P. Brockman, and Mr. B. Burns will open a discussion on Böhler's Influence on the Treatment of Fractures. There will also be a cinema demonstration.

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Wandsworth Common.
WEDNESDAY, April 12th.—9 P.M., Mr. R. Maingot: Surgical Injection Therapy.

SOCIETY FOR THE STUDY OF INEBRIETY.
TUESDAY, April 11th.—4 P.M. (at 11, Chandos-street, W.), Dr. E. W. Adams: Unusual Forms of Drug Addiction.

PADDINGTON MEDICAL SOCIETY.
TUESDAY, April 11th.—9 P.M. (at the Great Western Royal Hotel, Paddington, W.), Mr. J. C. Gilbert: Medical Certification by Insurance Practitioners.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
WEDNESDAY, April 12th.—8.30 P.M. (at the Medical Society of London, 11, Chandos-street, Cavendish-square, W.), Mr. A. Tudor Edwards: Some Aspects of the Technique of Thoracic Surgery.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, April 11th.—4.15 P.M., Mr. W. H. Hey: The Place of Radium in Surgery.

GLASGOW POST-GRADUATE LECTURES.
WEDNESDAY, April 12th.—4.15 P.M. (at the Royal Samaritan Hospital for Women), Dr. J. Gardner: Gynæcological Cases.

Appointments

BURGESS, W. J., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Loughton District of the County of Essex.

SLAUGHTER, E. V., M.R.C.S., L.R.C.P. Lond., Honorary Anæsthetist to the Princess Louise Kensington Hospital.

YOUNG, J. BRUCE, M.D. Edin., M.R.C.P. Lond., Honorary Assistant Physician to the National Temperance Hospital.

Births, Marriages, and Deaths

BIRTHS

CHAMBERS.—On March 30th, at a nursing-home, the wife of Dr. J. R. Chambers, of Oakhill-road, Putney, S.W., of a daughter.

MOORE.—On March 26th, at Maidenhead, the wife of Dr. Gilbert Moore, of a daughter.

OLIVER.—On March 23rd, at Edgefield, St. Peter's, Jersey, the wife of Dr. H. Gordon Oliver, M.C., of a son.

MARRIAGES

HOLLINGS—LIPSETT.—On March 25th, at St. Peter's Parish Church, Berkhamsted, Guy Bertram Hollings, M.D., F.R.C.S.E., to Bertha Winifred Lipsett.

DEATHS

ADDINSELL.—On April 1st, at By-the-Way, Laughton, Lewes, John Howard Addinsell, M.R.C.S., L.R.C.P. Lond., of Berkhamsted, Herts, in his 61st year.

BENSON.—On April 2nd, at his residence, Santosha, St. Aubins, Jersey, Surgeon-General C. H. Benson, late Indian Medical Service, aged 81.

DEANE.—On April 2nd, suddenly, at Scothern, Lincoln, Samuel Robert Deane, M.R.C.S., L.R.C.P.I., L.A.H., in his 73rd year.

EYTON-LLOYD.—On March 28th, at Malvern, Albert Eyton-Lloyd, M.D., aged 85.

ROBERTSON.—On March 29th, at the Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C., Graham Robertson, M.B., Ch.B. Edin., of The Brent House, Dartford, Kent.

SCALLON.—On March 30th, at Salkeld, Balmoral-road, Parkstone, Ernest Oliver Scallon, M.D., M.R.C.S., L.S.A., in his 78th year.

WILLIAMSON.—On April 1st, at Dulwich, James Williamson, L.R.C.P., L.R.C.S., of Camberwell-road, S.E.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.